

boulders, medium boulders stacked 2 rocks high, and small boulders stacked 3 rocks high to achieve a uniform feature height. The first course of the west face rests on shallow mounded sand that has accumulated on top of the bedrock. The east side of the wall and the majority of the feature surface is covered by thick vegetation and sand that has accumulated to the height of the wall. There are a few cobbles poking through the vegetation at the feature surface. A one course arrangement of small boulders extends to the south from the wall's south end, obscured by vegetation, so it is unclear if the 3 aligned rocks are linked with the wall. There is a natural pit in the sand to the immediate west of the 3 rock alignment, formed by live vegetation and a fallen snag. There is an accumulation or pile of large dead branches lying across the pit, plus a large snag lying parallel to the wall. There is little to no rubble surrounding the feature. The wall is in poor condition. Feature 98-836 b is a 3.1 m X .45 m deep quarried edge in the pāhoehoe bedrock situated perpendicular to the north end of component A, off of the wall's west side. It is a deep edge with only slightly natural fracturing in the bedrock surrounding it. There is one small boulder size pāhoehoe slab present at the west end of the E/W running edge. The feature is in fair condition and the vegetation includes *a'ali'i*, *pūkiawe*, *'ākia*, ferns, and grasses. The impacts include vegetation, seismic, weathering, soil accumulation, and fallen snags.

**HAVO-2005-D-32** (Feature 98-837a) is a 15.2m x 50 cm x 73 cm high wall. It is constructed with boulders that are stacked 3 to 4 rocks high. Feature has some rubble on the southwest end. This wall is in fair condition. 98-837b is a 9.2 m x 42 cm deep quarry. It is constructed with the removal of rock, leaving an edge. This feature is in good condition. The impacts for the feature are vegetation, seismic activity, and weathering. The vegetation is dense with *pūkiawe*, *a'ali'i*, fern, grasses, *'ākia*, and dead vegetative cover. This feature is in good to fair condition.

**HAVO-2005-D-33** (Feature 98-838) is a 17.1 m X 1 m X .59 m high wall constructed of stacked blocky pāhoehoe boulders built on top of pāhoehoe bedrock. The feature is along a NW/SE axis. The feature is not strictly linear or curvy, and wraps along the west side of a N/S running drainage. The east facing is constructed from large blocky pāhoehoe boulders that are stacked 2-4 rocks high to create a wall of uniform height. The feature surface consists of piled blocky pāhoehoe boulders creating an uneven choppy surface. The west side of the feature is not visible due to the vegetation and soil that has accumulated to the height of the wall. The vegetation of the area consists of *pūkiawe*, *a'ali'i*, ferns, grasses and the feature has been impacted by seismic, vegetation, weathering, and soil accumulation.

**HAVO-2005-D-34** (Feature 98-839) is 6.75 m X 75 cm X 85 cm high wall constructed of porous basalt slabs and located on the natural contour on the east side of the drainage. The northwest end abuts a pāhoehoe outcrop. Slabs are placed upright to maximize the height. The rocks are stacked to a height of 2-4 rocks high. The medial to the south end is at a minimum stacking in a matrix of ashy soil and moderate to dense vegetation. The feature probably continues south but the vegetation is too dense to see. The vegetation includes *a'ali'i*, bracken fern, grasses, partridge pea, and *pūkiawe*. Impacts on the feature include weathering, seismic, and vegetation.

**HAVO-2005-D-35** (Feature 98-840) is a 8 m X 7.5 m X 70 cm high enclosure constructed of porous basalt slabs located in the medial portion of drainage exterior. The feature is surrounded by a pāhoehoe outcrop and the interior is an ashy soil matrix. The feature is built around this natural contour and the slabs are laid upright along the exterior for height with the top having

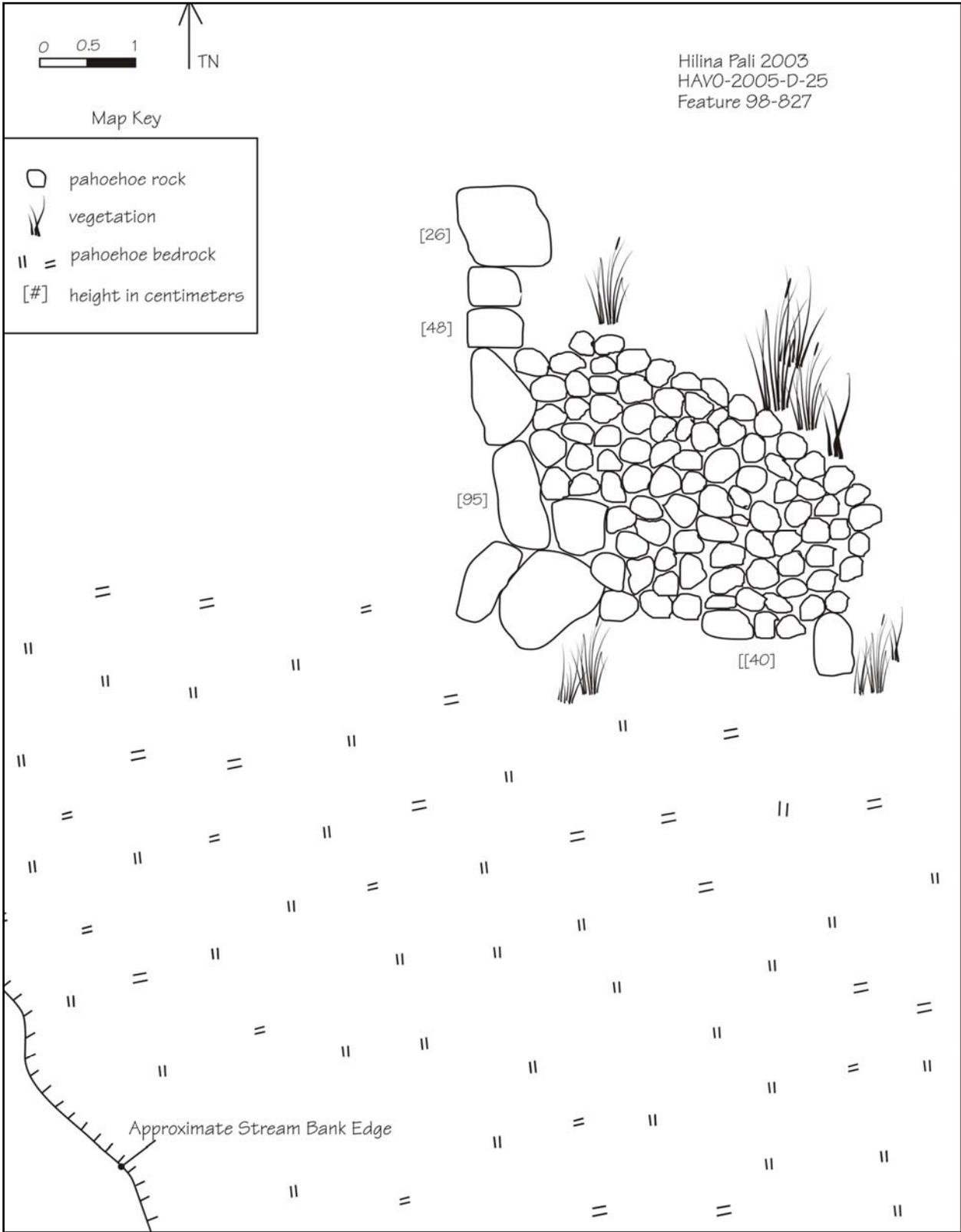


Figure 35. Feature HAVO-2005-D-25, Dam

Hilina Pali 2002  
 HAVO-2005-D-33  
 Feature 98-838, wall  
 April 2005  
 Cartography By J. Burrell

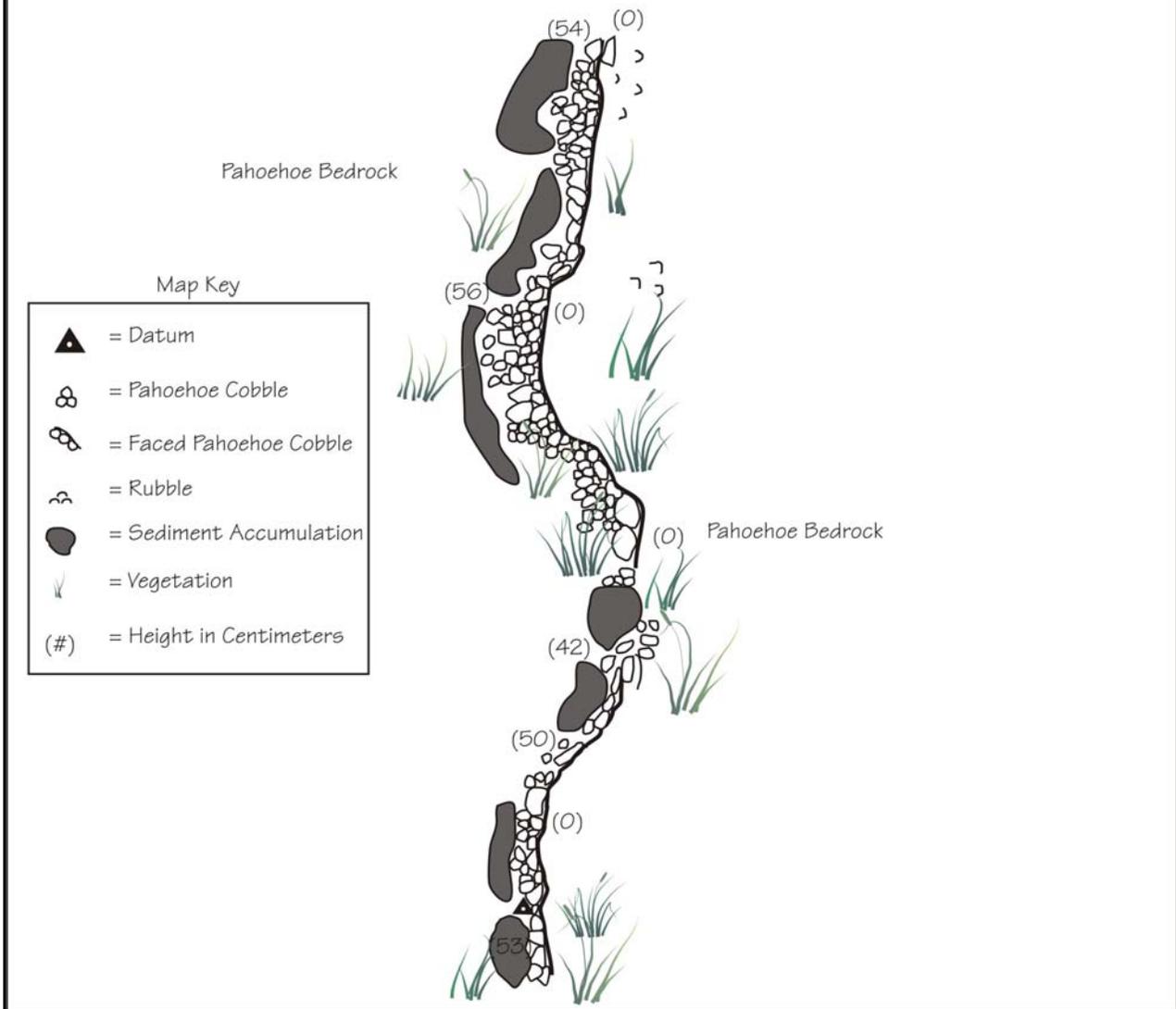


Figure 36. Feature HAVO-2005-D-33, Rock Wall

both upright and flat lying slabs. The exterior and the interior portions are filled with mainly grasses with a few small shrubs, a few medium shrubs, and a couple of large trees. The wall to the south is lower with the drainage wall at a higher elevation. The stacking height is one to two rocks high and the vegetation consists of *a'ali'i*, grasses, and *pūkiawe*. The impacts on the site include weathering, seismic, and vegetation and it is in fair condition.

**HAVO-2005-D-36** (Feature 98-841) is a 12.6 m X 1 m X 46 cm high wall constructed of porous basalt slabs located along a natural contour on the west edge of a drainage. The feature is built in a matrix of ashy soil and abuts a pāhoehoe outcrop on the east end. The slabs are laid at an angle with the slope. The larger slabs are on the drainage side with smaller slabs built up on a soil matrix. The wall is very disturbed and discontinuous at a point due to vegetation. The south end is embedded rubble stacking and it occurs to a height of 1-3 slabs high. The vegetation is dense to moderate, with mainly grasses and *pūkiawe* shrubs. A few dead branches are located within the feature. The vegetation includes *a'ali'i*, bracken fern, grasses, and *pūkiawe*. The impacts on the feature include vegetation, weathering, and seismic activity.

**HAVO-2005-D-37** (Feature 98-842) is a 5.6 m X 85 cm X 0.75 m wall constructed of stacked blocky pāhoehoe boulders. The wall is constructed on top of the pāhoehoe bedrock along a NW/SE axis. The SE end of the wall is built against the NW face of a pāhoehoe tumulus. The east facing is made from blocky pāhoehoe medium and large boulders stacked 2-3 rocks high. The facing is neatly stacked and organized creating a nicely vertical wall. The feature is lined on its west side with medium and large blocky pāhoehoe boulders with cobble fill. The west facing is not visible due to accumulated soil that has risen to height of wall. The vegetation is dense and



**Figure 37. HAVO-2005-D-43 Rock Wall**

Photo Courtesy of the National Park Service

covers large portions of the wall. There is little to no rubble around the feature and the wall is mostly intact with no obvious collapse. The feature lines the west side of the north/south running drainage. Vegetation of the area includes *ākia*, *a'ali'i*, *pūkiawe*, and grasses. Impacts on the feature include vegetation, seismic, weathering, soil accumulation, and water. The feature is in good condition.

**HAVO-2005-D-38** (Feature 98-843) is a 21 m X 75 cm X 60 cm high rock wall constructed of porous basalt slabs. The feature is located on the east edge of drainage, built abutting a pāhoehoe outcrop on the drainage side and on a matrix of ashy soil. The slabs are mainly upright along the exterior and the top of the feature. The stacking is to a height of 1 to 3 rocks high. The vegetation is dense to moderate and some areas seem discontinuous due to thick vegetation. Other portions appear collapsed with most of the wall in good condition. The feature is built against the natural outcrop. The impacts on the feature include vegetation, weathering, and seismic activity and the vegetation includes *a'ali'i*, bracken fern, grasses, and *pūkiawe*. The feature is in fair condition.

**HAVO-2005-D-39 (Feature 98-844)** is a 7 m X 60 cm X 0.66 m high rock wall constructed of stacked blocky pāhoehoe boulders and cobbles. The wall is built along a NW/SE axis to line the west side of a N/S running drainage. The walls southeast half is shallowly stacked, with an east facing constructed from small boulders and large cobbles stacked one to two courses high. The feature surface for this half consists of small cobbles piled 1-2 rocks high on top of a gentle slope to the S/SE. The sand has embedded most of the SE half feature stones and no west side facing is evident. There is dense rubble (cobble size) along the SE half's east side, likely accumulated due to water movement and erosion. The NW half of the feature is more substantial with an east face constructed from medium and large boulders that are stacked 3 courses high. This half's interior consists of small boulders and some cobbles that are haphazardly piled. The NW half is built on a steeper S/SE facing slope than the SE half with bare pāhoehoe bedrock visible along the east side. The west side is not visible due to an accumulation of soil that has reached the height of the wall. The NW end of the wall is not visible due to dense *pūkiawe* and this is also covering a section of the features interior portion. There is no rubble around the features NW half. The feature surface is uneven and of irregular heights for entire wall. The vegetation of the area also includes *a'ali'i*, *ākia*, grasses, and ferns. The feature is impacted by vegetation, seismic activity, soil accumulation, and erosion and is in fair condition.

**HAVO-2005-D-40** (Feature 98-846) is a 1.85 m X 2.1 m X 67 cm high cairn constructed of stacked blocky pāhoehoe small and medium boulders. The cairn is constructed mostly of small boulders with a few medium boulders and a few large cobbles. The cairn is stacked 3-4 courses high on top of a pāhoehoe rise located in the center of a N/S running drainage. It is built on a level area at a high elevation so it is clearly visible. There is a matrix of small cobbles and pebbles embedded in accumulated soil around the features base due to water movement through the drainage. The feature is intact and triangular shaped with wide square base that is built up to a surface containing three rocks. The vegetation around the feature includes *a'ali'i*, *pūkiawe*, and grasses.

**HAVO-2005-D-41** (Feature 98-852) is a 15 m X 1 m X .8 m high wall constructed of pāhoehoe cobbles and boulders and dry stacked two to four courses high. The wall begins along the south side of a small tumulus and trends northeast to southwest and then curves to the south-southeast. This feature is vertically faced and in excellent condition. There is a fine soil/sand deposition all along the west side of the wall, which could indicate less

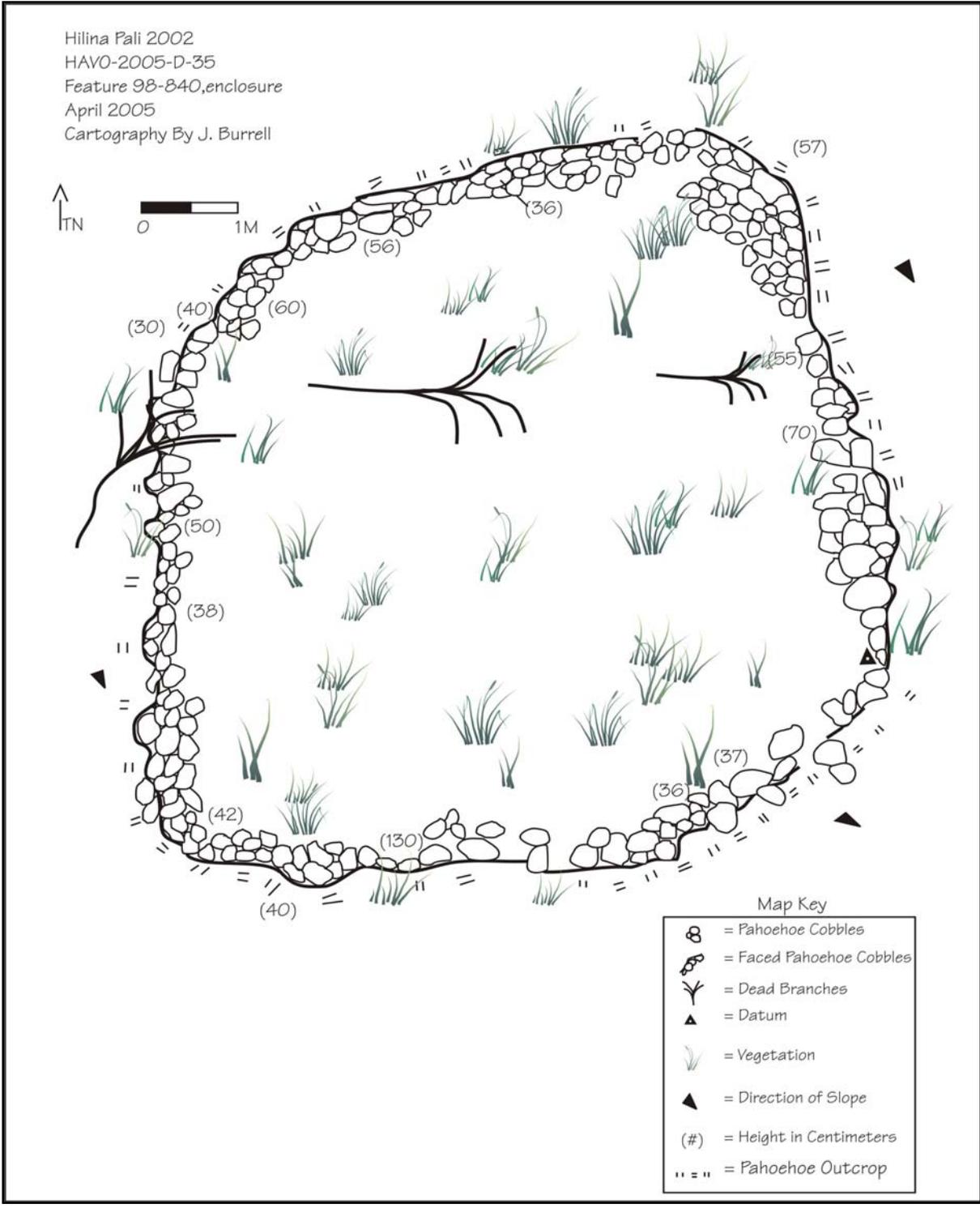
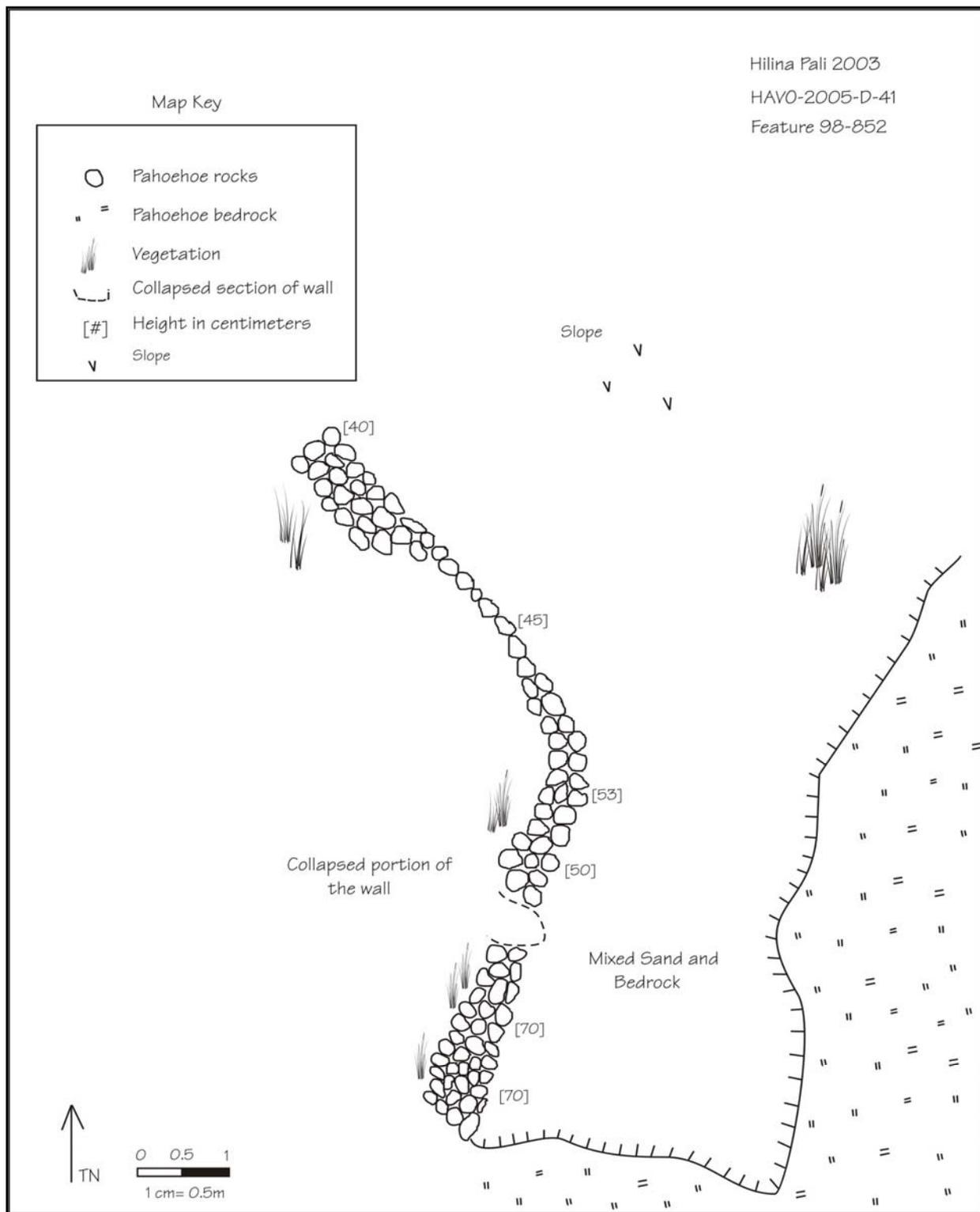


Figure 38. Feature HAVO-2005-D-35, Enclosure



**Figure 39. Feature HAVO-2005-D-41, Rock Wall**

water flowing through this area. The feature could potentially be impacted by flooding and vegetation and is surrounded by *a'ali'i*, *pūkiawe*, broomsedge, molasses grass, as well as other grasses. The feature is in excellent condition.



**Figure 40. HAVO-2005-D-41 West Wall**  
Photo Courtesy of the National Park Service

**HAVO-2005-D-42** (Feature 98-854) is a 12 m X 60 cm X 60 cm high wall constructed of pāhoehoe cobbles and small boulders. This wall trends N/SE on the east side of the channel. The rocks are stacked 1-courses high and have been quarried from the pāhoehoe bedrock to the NNW of the wall. The vegetation of the area consists of *a'ali'i*, molasses grass, *pūkiawe*, and ferns. Potential impacts on the site include flooding and vegetation. The feature is in good condition.

**HAVO-2005-D-43** (Feature 98-855) is a 6.7 m X 3.1 m X 1.1 m high wall constructed of large pāhoehoe boulders and some cobbles. The feature is a wall located on the NW side of the drainage. It is constructed with nicely faced upright and stacked pāhoehoe boulders 2-4 courses high. There are several cobbles deposited within the drainage to both N and S of the wall as well as a few large boulders to the south. The vegetation of the area includes *a'ali'i*, *pūkiawe*, molasses grass, and other grasses. The impacts include flooding and vegetation and the feature is in excellent condition.

**HAVO-2005-D-44** (Feature 98-856) is a rock wall constructed of pāhoehoe boulders and cobbles. The dam/wall consists of two parts, one on the east side of the drainage and one on the west side of the drainage. The eastern portion of the dam/wall appears to be the dam portion guiding and slowing water into the drainage. This eastern portion is large and in good condition with a nice vertically faced east side. The dimensions of this east portion are 9.1 m X 4 m X 70 cm high. The eastern portion is made with dry stacked



**Figure 41. HAVO-2005-D-44, Geologist Drill Hole**  
Photo Courtesy of the National Park Service

pāhoehoe boulders and cobbles. The western portion functions as a retaining wall and is also constructed from pāhoehoe boulders and cobbles. Some portions of the wall are stacked only 3 courses high and other portions are up to six courses high. The wall is intact and in good condition, however the southernmost part of it appears collapsed and disturbed. The dimensions are 18 m X .5-2 m X .5- 1.5 m long and the feature functions as a drainage, channeling the water over a pāhoehoe outcrop. There are three meters between the east and west side of the feature.

In the eastern part of the feature there is a hole that appears to be deliberately placed in one of the boulders along the side of the structure, in one of the pāhoehoe boulders on the west part of the structure, 10 cm long X 5 cm wide. The vegetation of the area consists of *pūkiawe*, *a'ali'i*, molasses grass, '*ōhi'a*', and ferns. The feature could potentially be impacted by erosion and vegetation. The feature is in good condition.

**HAVO-2005-D-45** (Feature 98-858) is 4.5 m x1.2 m and 80 cm in height rock wall and a 4.5 m x 3 m and 1.4 m in height dam. This feature has two portions, one on the eastern side of the pāhoehoe outcrop and one on the western side of the outcrop. The eastern portion of the feature is a collapsed retaining wall for the drainage built by the C.C.C. The wall is small and is made of mostly pāhoehoe boulders with some cobbles dry stacked 3-5 courses high. The western portion of the feature appears to be more of a dam and functioned to guide the water into the drainage. The dam is much larger than the retaining wall and is also made of pāhoehoe boulders and cobbles dry stacked 3-6 courses high. The western portion looks somewhat disturbed. There is approximately 2 m in between the retaining wall and the dam. Seismic activity, vegetation and erosion are potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, molasses grass and *a'ali'i*. This feature is in fair condition.

**HAVO-2005-D-46** (Feature 98-860) is a 24 m x 1 m X 1.5 m in height rock wall constructed from pāhoehoe boulders and cobbles dry stacked 3-6 courses high. The southern most portion of the rock wall appears to be disturbed and collapsed, possibly by erosion, vegetation and or seismic activity. The northern most portion of the wall is still intact, although very invaded by vegetation. The function of this feature is as a retaining wall for the drainage. The wall is located along the western edge of a pahoehoe outcrop that trends north to south. Seismic activity, erosion and vegetation are potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, grasses '*ōhi'a*', ferns and *a'ali'i*. This feature is in good condition.

**HAVO-2005-D-47** (Feature 98-862) is a 3.2 m x1.5 m X 1.2 m in height dam on the east side and a 2.2 m x1.2 m and 1.5 m in height on the west side. The dam is partially collapsed however there are some parts that are still intact along the outside edges of the feature. On the western side of the dam the pāhoehoe rocks are stacked up to 8 courses high with some upright pāhoehoe slabs facing the northern side of the dam. The eastern portion of the dam is stacked 2-3 courses high and looks very collapsed. On the eastern side there is a petroglyph of a large cross on one of the boulders 60x40 cm. The dam is along the east and west edge of the pāhoehoe outcrop that serves as the drainage. There is some connection of the dam in the middle but it looks collapsed and disturbed. There are some upright blocky pāhoehoe slabs between the eastern and western sides of the dam that may have connected both sides at one time. The eastern portion of the dam has upright blocky pāhoehoe slabs creating a nice facing for the north side of the feature. Seismic activity, erosion and vegetation are potentially impacting this feature. Vegetation

surrounding this feature includes *pūkiawe*, grasses, *‘ōhi‘a*, ferns and *a‘ali‘i*. This feature is in fair condition.

**HAVO-2005-D-48** (Feature 98-869) is a 27.1 m X 40 cm- 1 m X 0.66 m high wall constructed of stacked pāhoehoe boulders. The feature contains a mixture of small to large sized blocky pāhoehoe boulders stacked from 2 to 3 courses high on top of the pāhoehoe bedrock. The stacking is very organized and along a N/S axis. The wall is not perfectly straight but rather curves in places. The wall follows the natural contour of the bedrock, sloping downhill to the south. To the west of the wall there is an area of visible bare pāhoehoe bedrock with some scattered vegetation. To the east of the wall there is an area of dense vegetation and soil accumulation reaches the level of the top of the wall. There is a clear facing all along the wall's west side and around its north and south ends. The east facing is blocked by retained soil and vegetation. The wall appears mainly intact with little to no collapse. The vegetation of the area includes *a‘ali‘i*, *pūkiawe*, partridge pea, lantana, ferns, and grasses. The feature is impacted by seismic, vegetation, and weathering.

**HAVO-2005-D-49** (Feature 98-870) is a 1.7 m x 54 cm X 60 cm in height rock wall. The wall is constructed with dry stacked pāhoehoe cobbles and some boulders 3-4 courses high. This rock wall runs north to south and functions as a retaining wall for water drainage. The rock wall is aligned with a pāhoehoe outcrop. There is vegetation to the west of the wall. Seismic activity, vegetation and fire are potentially impacting this feature. Vegetation surrounding this feature includes *‘ōhi‘a*, grasses, *pūkiawe* and *a‘ali‘i*. This feature is in excellent condition.

**HAVO-2005-D-50** (Feature 98-871 A, B) is a 11 m X 3 m X 53 cm high elongated wall constructed of porous basalt cobbles and slabs with a slight bend. The wall is located on a pāhoehoe outcrop and is stacked 3-4 courses high. Vegetation is thick on both sides of the wall and one side of the wall has rubble which is evident on the down slope.

**Feature 98-871B** is a 6.5 m X 3.75 m X 52 cm high L shaped wall constructed of porous basalt cobbles and slabs. The wall is located on a matrix of loose ash and abuts a pāhoehoe flow. The wall appears to be well preserved where it abuts the tumulus. The slabs are placed as a base with smaller cobbles piled on the slabs. The rocks are stacked 2-3 rocks high. The vegetation is dense throughout the feature and includes *a‘ali‘i*, grasses, partridge pea, and *pūkiawe*. The impacts on the feature include seismic, weathering, and vegetation. The feature is in good condition.

Artifacts were found around this feature and include a rubber shoe sole, dish fragment, modified basalt rock, and some glass fragments. The rubber shoe sole was designated as **B1** and has the dimensions 23 cm X 8.5 cm. It is very worn. The dish fragment was designated as **B2** and is made of ceramic. There is no makers mark present and has an uneven edge. The interior has a pink flower and green leaf pattern along the edge and the artifact has the dimensions of 11 cm X 10 cm X 3 cm. It is possibly a shallow bowl and located next to rock near the L shaped wall. The basalt rock was designated as **BA1** and has the dimensions of 7 cm X 6.5 cm X 3 cm. The basalt is weathered and covered in ashy soil. One side is disc shaped and the other is tapered to a point.

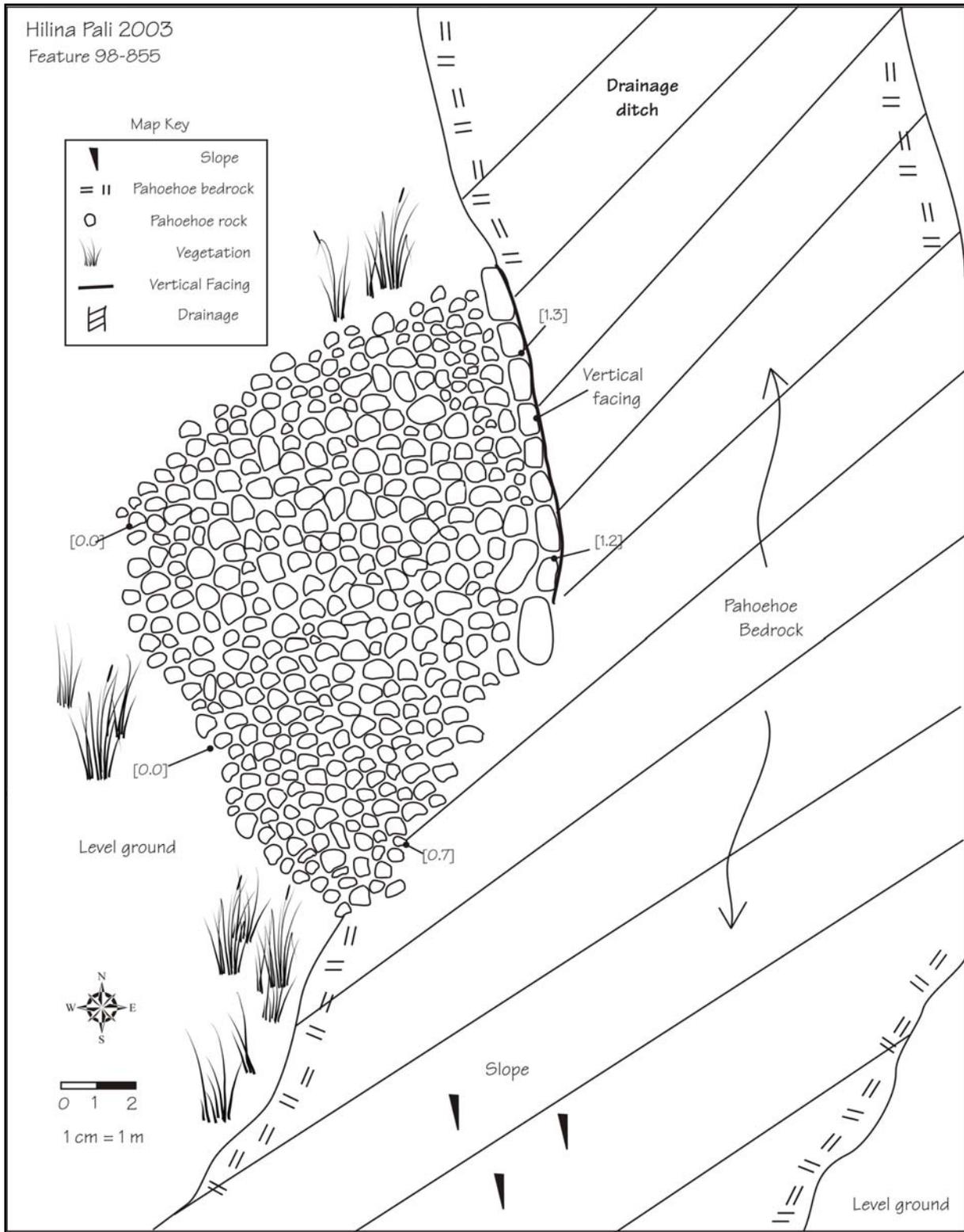
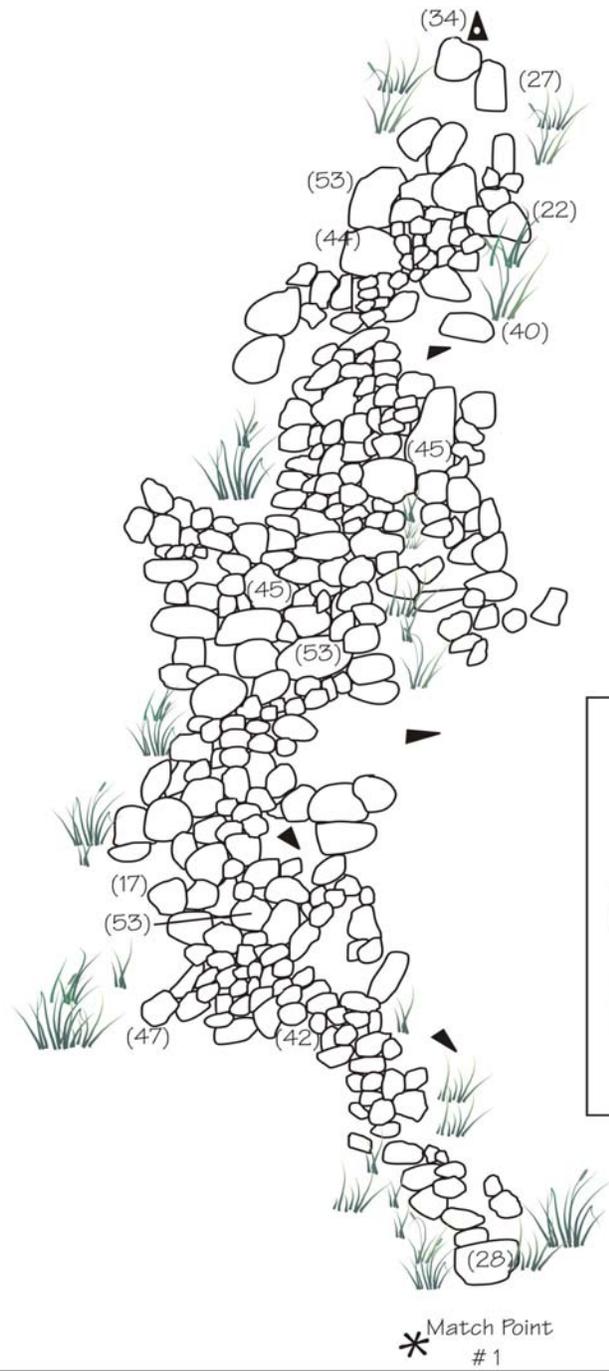
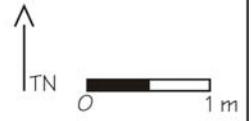


Figure 42. Feature HAVO-2005-D-43, Rock Wall

Hilina Pali 2002  
 HAVO-2005-D-50  
 Feature 98-871  
 April 2005  
 J. Burrell



Map Key

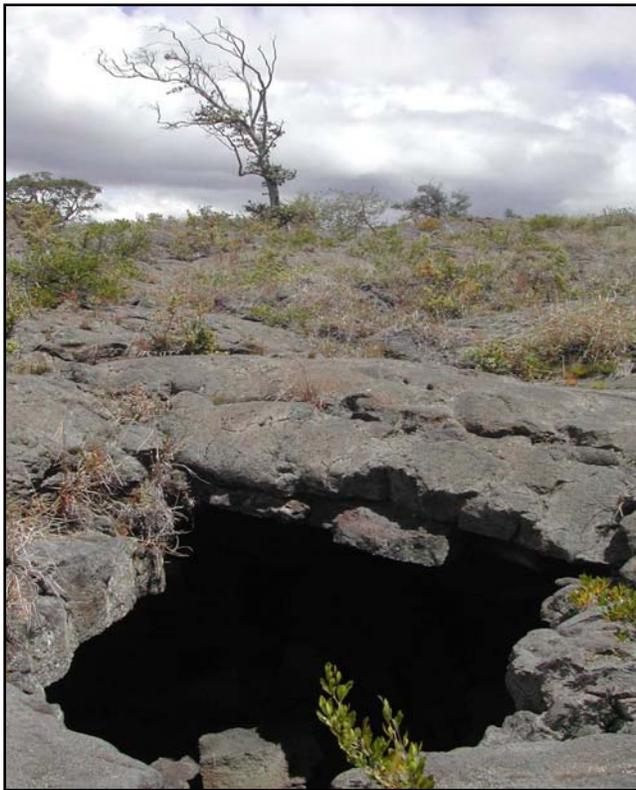
- = Datum
- = Direction of Slope
- = Pahoehoe Cobbles
- = Vegetation
- (#) = Height in Centimeters

**Figure 43. Feature HAVO-2005-D-50, Rock Wall**

The artifact was located between a wall and an L shape with no association. The glass found was designated as **BA3** and is thick and translucent.

The glass is cloudy white and there are six fragments. It appears to be a glass jar with a base however, there is no makers mark. The largest fragment is 10 cm X 6 cm X 8 cm high. The base is broken into two, with the edge still fairly sharp, which indicated that it could have been broken recently. The last artifact is also glass and was designated as **BA2**. The glass is clear and is possibly modern. There were three fragments found sitting in a crevice of a rock slab. The glass covers an area of 5.5 cm X 2 cm.

**HAVO-2005-D-51** (Feature 98-873) is a 3 m X 80 cm X 75 cm in height dam constructed across a small channel. The dam is constructed with large blocky pāhoehoe cobbles and boulders placed upright along the northern face of the dam with rocks stacked 1-2 courses high, probably for reinforcement, along the south side of the dam. Approximately 4 m down slope there is a cluster of pāhoehoe cobble and boulder sized stones that may have tumbled down from water flow, or, it may have served as a second dam to slow water. Flooding is potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, molasses grass, broomsedge grass and fern. This feature is in good condition.



**Figure 44. HAVO-2005-D-53, Cave Entrance**

Photo Courtesy of the National Park Service

**HAVO-2005-D-52** (Feature 98-874) is a 20 m X .58 m X 1.8 m in height rock wall stacked 2-3 courses high. The wall is constructed with pāhoehoe cobbles and trends north to south. The north end of the wall has a level filled area that extends 2.5 m to the east of the wall and 3m along the length of the wall. The wall functions to retain water and runs along a pāhoehoe outcrop which lies to the west of the feature; therefore the retaining wall is on the east side of the drainage. To the east of the feature there is a lot of vegetation. Seismic activity, vegetation and erosion are potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, 'ōhi'a, grasses and *a'ali'i*. This feature is in excellent condition.

**HAVO-2005-D-53** (Feature 98-875) is a 2.0 m X 1.7 m X 1.4 m cave opening. The cave is located within one of the drainages and has three large cobbles and one boulder stacked at the entrance to make it easier to access. The cave runs *makai* for approximately 40 m and *mauka* for 10 m.

Other than the stacked rocks at the entrance the cave does not appear to have any cultural material inside. There is a large amount of soil deposited into the cave as well as mud and debris. The vegetation of the area consists of *pūkiawe* and the feature is in good condition.

**HAVO-2005-D-54** (Feature 98-877) is a 20 cm X 14 cm X 1-1.75 cm deep pecked petroglyph. The petroglyph was pecked into the W/NW face of a shallow tumulus. The tumulus face is weathered, cracked, and light brown in color. The pecked image looks like a letter "E" followed by a period. The petroglyph is deeply pecked with nice straight geometric lines and sharp corners. The area where the petroglyph is carved has some shallow natural cracks surrounding the feature, plus a small hole in the bedrock that is probably

natural. The petroglyph is located less than 10 m from the west of Hilina Pali Road. A shotgun shell was found at the south corner of tumulus, which is 1.2 cm in diameter.



**Figure 45. HAVO-2005-D-53,  
Stacked Rocks at Cave Entrance**  
Photo Courtesy of the National Park Service



**Figure 46. HAVO-2005-D-54 Pecked  
Petroglyph**

Photo Courtesy of the National Park Service

**HAVO-2005-D-55** (Feature 98-878) is a 50 cm x18 cm petroglyph on a blocky upright pāhoehoe slab. The petroglyph is pecked and says "Joey." This feature is potentially being impacted by erosion. Vegetation surrounding this feature includes molasses grass, *pūkiawe* and *a'ali'i*. This feature is in good condition.

**HAVO-2005-D-56** (Feature 98-880) is a 5.2 m long X 5 m wide X 1.40 m in height dam on the west side and a 4 m x 2 m and 1.3 m in height dam on the east side. This feature is constructed with large pāhoehoe boulders placed upright on both the east and west sides of the drainage and reinforced by pāhoehoe boulders stacked 3-5 courses high on the east side and as many as 10 courses high on the west side. The drainage is approximately 4m wide between the east and west portion of the dam. Flooding and vegetation are potentially impacting this feature. Vegetation surrounding

this feature include *pūkiawe*, molasses grass, dead *‘ōhi‘a*, ferns and *a‘ali‘i*. This feature is in good condition.

**HAVO-2005-D-57** (Feature 98-881) is a 1.2 m X 50 cm X 1.2 m in height Hilina Pali Information Pointer. This feature is made of mortared pāhoehoe boulders and some cobbles. The pointer is located off the end of Hilina Pali road approximately 50 m south of the shelter at the start of the trailheads. On the top of the information pointer there is a metal plate with arrows and names pointing towards Ka‘u, South, Kalue, Puu Pukapu, Apua Point and Puna. This feature is located on top of the pali overlooking the ocean. Seismic activity and fire are potentially impacting this feature. Vegetation surrounding this feature includes grasses, *koa*, *‘ōhi‘a* and guava. This feature is in excellent condition.



**Figure 47. HAVO-2005-D-57 Hilina Pali Pointer**

Photo Courtesy of National Park Service  
SerService,Hawai’Volcanoes National Park

**HAVO-2005-D-58** (Feature 02-07) is a 6 m x 1.4 m x 48 cm high wall. It is constructed of blocky pāhoehoe boulders and upright slabs. The feature is built across the length of the drainage, with the center portion of the wall showing the most damage strewn to the southeast. The rocks are built to a height of 1 to 2 rocks high. Impacts include water, weathering, and vegetation. The vegetation includes molasses grass, other grasses, *pūkiawe*, *a‘ali‘i*, bracken fern, and *‘ākia*. This feature is in fair condition.

**HAVO-2005-D-59** (Feature 02-08 A-D) consists of three walls and one quarried edge. Part A is a short wall segment stacked one to two courses high against the base of a NW face of a pāhoehoe tumulus. The dimensions of the wall are 1.9 m X 0.7 m X 0.6 high. The wall runs essentially along a NE/SW axis. There is rough facing along the NE edge, but it is not orderly, made with blocky pāhoehoe boulders (medium and large). The feature slopes with topography to the SW. There is no rubble currently surrounding the feature. The feature surface exhibits a gap but was otherwise created to be even.

Part B of the feature is also a wall and was built along a N/S axis with the dimensions 5.1 m X 0.6 m X 69 cm high. Both N and S ends abut and are built against a pāhoehoe rise. The feature is built on top of pāhoehoe bedrock. The west facing is constructed from blocky pāhoehoe boulders (a few large and some small). The feature interior consists of blocky pāhoehoe small and medium cobbles. The east side of the feature is not visible due to accumulated sand that has reached the height of the wall. The feature surface appears uneven with rocks not tightly fitted,

but the surface is level. There is a small collapsed portion of wall at the north end where the feature rocks have fallen into a crack in the bedrock that intersects the wall on the west side.

Part C is also a wall with the dimension 3.8 m X 0.7 m X 56 cm high. The wall is built along a N/S axis on top of pāhoehoe bedrock that slopes to the south. The wall is constructed of medium to large blocky pāhoehoe boulders that are stacked one to two courses high. The facing is gently curved, opening to the west. The feature interior consists of cobble fill. The features east side edge is not visible due to accumulated sand that has reached height of the wall. The north end of the wall is constructed against a south facing slope of pāhoehoe rise. The ground beneath the feature slopes very gently to the south. The feature surface is uneven with the rocks loosely fitted but level.

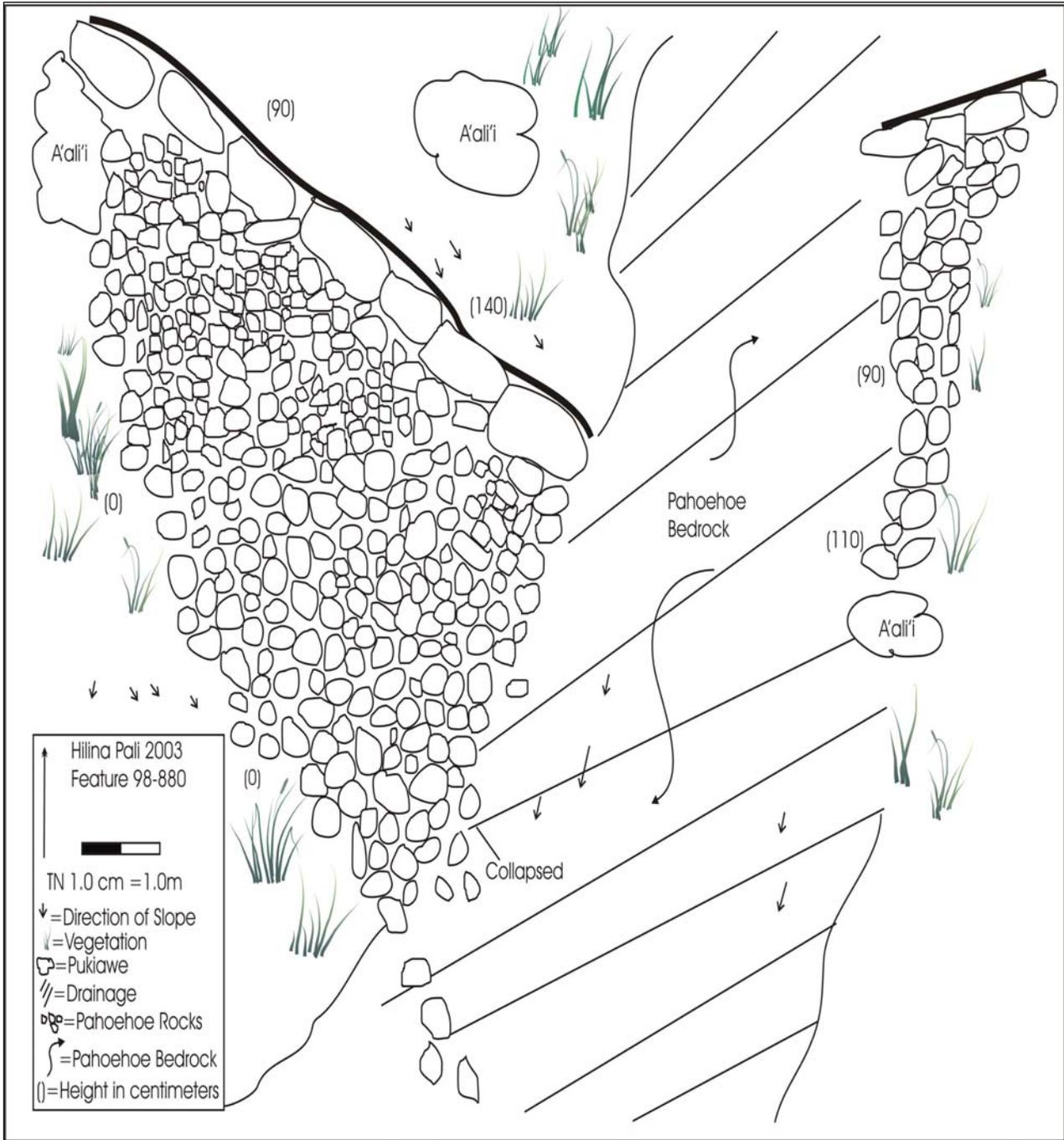
Part D is the west part of component C, a possible quarried edge in the pāhoehoe bedrock. There is a lot of natural bedrock breakage in the vicinity. If it was quarried, the shallow depth suggests cobble sized rocks were taken from this location. There are many better/clearer examples of quarrying in the area along the same drainage. If this is a quarry, it is in poor condition. There is a concentration of rubble that likely accumulated due to erosion. This is located approximately 2 m to the west of feature 02-08. The components of feature 02-08 are all located along the eastern side of a N/S running drainage with walls lining the drainage's east side. The vegetation of the area includes *pūkiawe*, *a'ali'i*, ferns and grasses. Impacts include seismic, weathering, water, accumulated soil and vegetation. The feature is in fair condition.

**HAVO-2005-D-60** (Feature 02-09) is a 5.95 m x 1.95 m x 65 cm deep rock quarry pit. This pit is constructed by the removal of rocks from bedrock, creating a pit. Feature is 3 m west of feature 98-801. The types of impact include floodwaters, weathering, and vegetation. The vegetation includes bracken fern, partridge pea, grasses, and *a'ali'i*. This feature is in good condition.

**HAVO-2005-D-61** (Feature 02-10) is a 8.5 m long x 76 cm deep rock quarry. This feature is located across the width of a drainage. Blocky pahoehoe boulders, cobbles, and pebbles are located at the base of the quarried edge. The slope is to the south. Impacts include floodwaters, weathering, and vegetation. Vegetation consists of *pūkiawe*, *a'ali'i*, grasses, and partridge pea. This feature is in good condition.

**HAVO-2005-D-62** (Feature 02-11 a, b) is a 2.8 m x 1.25 m x 27 cm deep rock quarry. This feature is constructed from a shallow pāhoehoe rise. Quarried area is within a pāhoehoe drainage. 02-11b is a 7 m x 2.6 m x 35 cm deep quarried edge. The feature is cut into a shallow pāhoehoe rise. A few pebble sized rocks are located at the base of the NW edge of quarry. Both features have been impacted by floodwater, weathering, and vegetation. These features are in good condition.

**HAVO-2002-D-63** (Feature 02-12) is a 4.3 m x 8 cm x 47 cm deep rock quarry. This feature is located near the east edge of the pāhoehoe drainage. The horizontal quarried surface covers an area of 2.8 m x 80 cm wide and is located above the SE edge of the feature. Types of impacts



**Figure 48. Feature HAVO-2005-D-56, Dam**

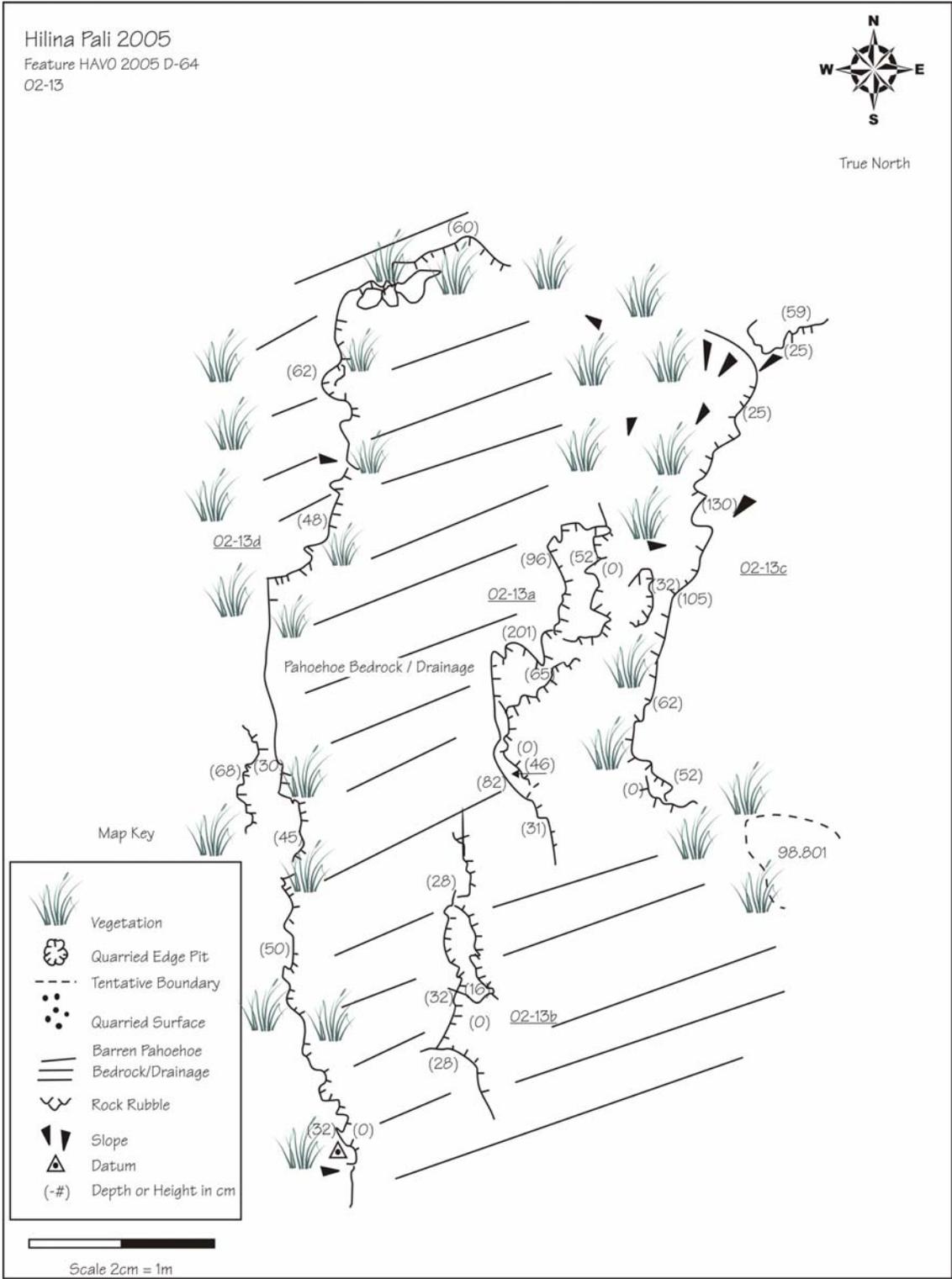


Figure 49. Feature HAVO-2005-D-64, Quarry

include floodwaters, weathering, and vegetation. The vegetation consists of molasses grass. This feature is in good condition.

**HAVO-2005-D-64** (Feature 02-13 a, b) is a 8 m x 1.02 cm deep quarried edge. The edge faces E-SE with 1 shelf (6.7 m x 1.2 cm x 37 cm deep quarried shelf). 02-13b is a 8.4 m x 3.2 m deep quarried edge with a shelf 2.1 m x 70 cm x 16 cm deep. This quarry is SW of 02-13a. 02-13c is a 10.5 m x 1.3 m deep quarried edge. Located along the east bank of the drainage. 02-13d is a 21 m quarried edge. Sub-feature is located on the west bank of the drainage . The south section measures 8 m x 68 cm deep and the north section is 10.5 m x 62 cm deep. The impacts to this feature include floodwater, weathering, and vegetation. The vegetation consists of molasses grass, *a'ali'i*, *pūkiawe*, partridge pea, other grasses, and bracken fern. This feature is in good condition.

**HAVO-2005-D-65** (Feature 02-14) is a 3.5 m x 52 cm deep quarried edge. Feature is located in a pāhoehoe drainage. The quarrying is at the SE face of a shallow rise. The vertical edge creates a shelf. Rubble is located at the base of the quarried edge. Impacts consist of floodwater, weathering, and vegetation. Vegetation includes molasses grass, other grass, *pūkiawe*, and *a'ali'i*. This feature is in good condition.



**Figure 50. Feature HAVO-2005-D-64 Rock Quarry**  
Photo Courtesy of the National Park Service

**HAVO-2005-D-66** (Feature 02-15) has dimensions of 3.3 m x 1.2 m deep on the north end, 4.5 m x 1 m deep on the west end, and 6.2 m x 3.2 m deep on the east end. This feature is a quarry located near the east bank of the drainage. A section of the bedrock has been quarried to create a low basin, which funnels the water downslope. The impacts are floodwater, weathering, and vegetation. The vegetation includes molasses grass, bracken fern, *pūkiawe*, other grasses, and *a'ali'i*. This feature is in good condition.

**HAVO-2005-D-67** (Feature 02-16 a) is a 8.2 m x 45 cm deep rock quarry. Located as the southern most quarry in complex and covers the width of the drainage. Feature 98-804 is located on the north edge of the quarry. 02-16b is 4 m x 1.4 m x 36 cm deep quarry. Sub-feature is located north of 02-16a. 02-16c is 2 m x 90 cm x 32 cm deep quarry. This sub-feature is located

on the east end of 02-16b. 02-16d is a 5.4 m x 21 cm deep quarry. Located east and above 02-16c with a shelf 10 cm high. 02-16e is a 15 m x 35 cm deep quarry. 98-805b is 50 cm east of this sub-feature. The impacts on this feature include floodwater, weathering, and vegetation. Vegetation consists of molasses grass, *pūkiawe*, *a'ali'i*, bracken fern, and other grasses. This feature is in good condition.

**HAVO-2005-D-68** (Feature 02-17a) is a 8 m x 44 cm deep rock quarry. The quarried edge faces down the drainage. This sub-feature is in good condition. 02-17b is a 5.4 m x 42 cm high wall. It is constructed of blocky cobbles and boulders stacked to a height of 2 to 3 rocks high. This sub-feature is in fair condition. 02-17c is a 1.65 m x 1.6 m x 79 cm high rock pile. It is constructed on the north end of 02-17a with blocky pāhoehoe boulders stacked 2 rocks high. This sub-feature is in fair condition. The impacts on the feature include floodwater, weathering, and vegetation impacts. The vegetation consist of *pūkiawe*, *a'ali'i*, molasses grass, other grass, and bracken fern.

**HAVO-2005-D-69** (Feature 02-18) is a 4.5 m x 32 cm deep rock quarry. The quarried horizontal surface is 3.4 m x 1.4 cm in area. Both are located on the west edge of a drainage. Alluvial deposition of rocks is 1 m west of quarry. Feature is located within a drainage, apart from the main drainage. Impacts include floodwaters, weathering, and vegetation. The vegetation consists of *a'ali'i*, *pūkiawe*, and molasses grass. This feature is in good condition.

**HAVO-2005-D-70** (Feature 02-19 a) is a 2.35 m x 1.1 m x 48 cm high wall. It is constructed with blocky pāhoehoe cobbles, boulders, and pebbles stacked to a height of 2 to 3 rocks high with facing. Sediment deposition is almost at the same height as the wall. This sub-feature is in fair condition. 02-19b is a 1.5 m x 1.3 m quarry. The quarry is located 3 m NE from 02-19a. Rocks were quarried from pahoehoe bedrock. This sub-feature is in good condition. Types of impacts are floodwaters, weathering, and vegetation. The vegetation consists of *pūkiawe*, *a'ali'i*, molasses grass, and bracken fern.

**HAVO-2005-D-71** (Feature 02-20 a, b, c) is a 2.3 m x 1.50 m rock quarried area with a depth of 35 cm. It is located within the drainage and constructed at the top and south facing slope of pāhoehoe bedrock. Feature 98-806a is located less than 100 cm west of the quarry. 02-20b is a 3.7 m x 2.8 m x 35 cm deep quarry. Sediment deposition has collected at the base of the pit. Vegetation is growing within, quarry. 02-20c is a 2.5 m x 1 m x 22 cm deep quarry. It is constructed on the NE facing slope of the tumulus. An alluvial deposit is located to the NE of this feature. Impacts include floodwaters, weathering, and vegetation. The vegetation consists of *pūkiawe*, *a'ali'i*, molasses grass, other grasses, and dead vegetation. This feature is in good condition.

**HAVO-2005-D-72** (Feature 02-21) is a 3.1 m x 1.9 m x 81 cm deep quarry. Feature is located 3 m west of feature 98-807 within the drainage. The edge is C-shaped and the SE section is quarried into a shelf. Impacts are floodwater, weathering, and vegetation. The vegetation includes molasses grass and *pūkiawe*. This feature is in excellent condition.

**HAVO-2005-D-73** (Feature 02-22) is a 4.6 m x 3.25 m x 52 cm deep quarry. It is located on the west edge of the drainage and across the length of pāhoehoe rise. Rubble is present on the southwest side. Impacts include floodwaters, weathering, and vegetation. The vegetation consists of *pūkiawe*, molasses grass, other grass, *a'ali'i*, and dead vegetation. This feature is in good condition.



**Figure 51. HAVO-2005-D-72 Rock Quarry**  
Photo Courtesy of the National Park Service

**HAVO-2005-D-74** (Feature 02-23) is a 2.0 m x 27 cm high quarried edge. The horizontal surface on the east side covers an area of 2.85 m x 1.70 m. To the E-SE, a quarried edge has dimensions of 2 m x 30 cm high with a shelf with height of 12 cm. Rubble is located southeast of the quarried edge. Impacts are floodwater and weathering. Vegetation on site includes *a'ali'i*, *pūkiawe*, red top natal, and bunch grass. This feature is in good condition.

**HAVO-2005-D-75** (Feature 02-24a) is a two tiered rock quarry. The lower tier measures 5 m x 37 cm deep with the upper tier 6 m x 45 cm deep. Between tiers includes an area that has been quarried with dimensions of 5.5 m

x 2 m. 02-24b is a 2 m x 1.8 m x 27 cm deep quarry. 02-24c is a 3.4 m x 26 cm deep quarried edge. This edge is L-shaped and located 3 m east of 98-810. A horizontal quarried surface to the west has an area of 2.1 m x 1.55 m. 02-24d is a 4 m x 28 cm deep quarried feature. The quarried surface to the west is 3.5 m x 1.2 m. Impacts are floodwater and weathering. Vegetation includes *pūkiawe*, *a'ali'i*, molasses grass, red top natal, bunch grass, and *'ākia*. This feature is in good condition.

**HAVO-2005-D-76** (Feature 02-25) is a 4.85 m x 70 cm x 36 cm high wall. It is located on the west side of drainage. Feature has been constructed with blocky pāhoehoe cobbles and boulders. The facing of the wall is created with slabs. The stacking is to a height of 1 to 2 rocks high. The impacts associated with this feature are floodwaters, weathering, and vegetation. The vegetation includes molasses grass, bracken fern, and red top natal. This feature is in fair condition.

**HAVO-2005-D-77** (Feature 02-26a) is a rock quarry in two areas. The first area has dimensions of 4 m x 1.4 m x 55 cm deep and the second with 2.8 m x 1.4 m x 28 cm deep. It is located on the top of a small tumulus with the northwest base having alluvial deposits of cobbles. 02-26b is a tumulus quarried into four parts: the first is the northern most area with dimensions of 1.9 m x

1 m x 28 cm deep. The second is along the northeast area with measurements of 1.2 m x 80 cm x 12 cm deep. The third area is 1.4 m x 1.3 m x 41 cm deep along the southeast section. And the fourth area is 1.1 m x 1.1 m x 50 cm deep along the southeast section. This feature is impacted by weathering.

**HAVO-2005-D-78** (Feature 02-27) is a 3.5 m x 1.2 m x 33 cm deep quarry. The feature is located to the south of the convergence of two drainages and on top of a shallow pāhoehoe rise. It is constructed by the removal of rocks. Southeast of the quarry is a rock pile of alluvial origin, consisting of boulders with the height of 1 rock high. Types of impacts include floodwaters, weathering, and vegetation. The vegetation consists of *pūkiawe*, *a'ali'i*, red top natal, and other grasses. This feature is in good condition.

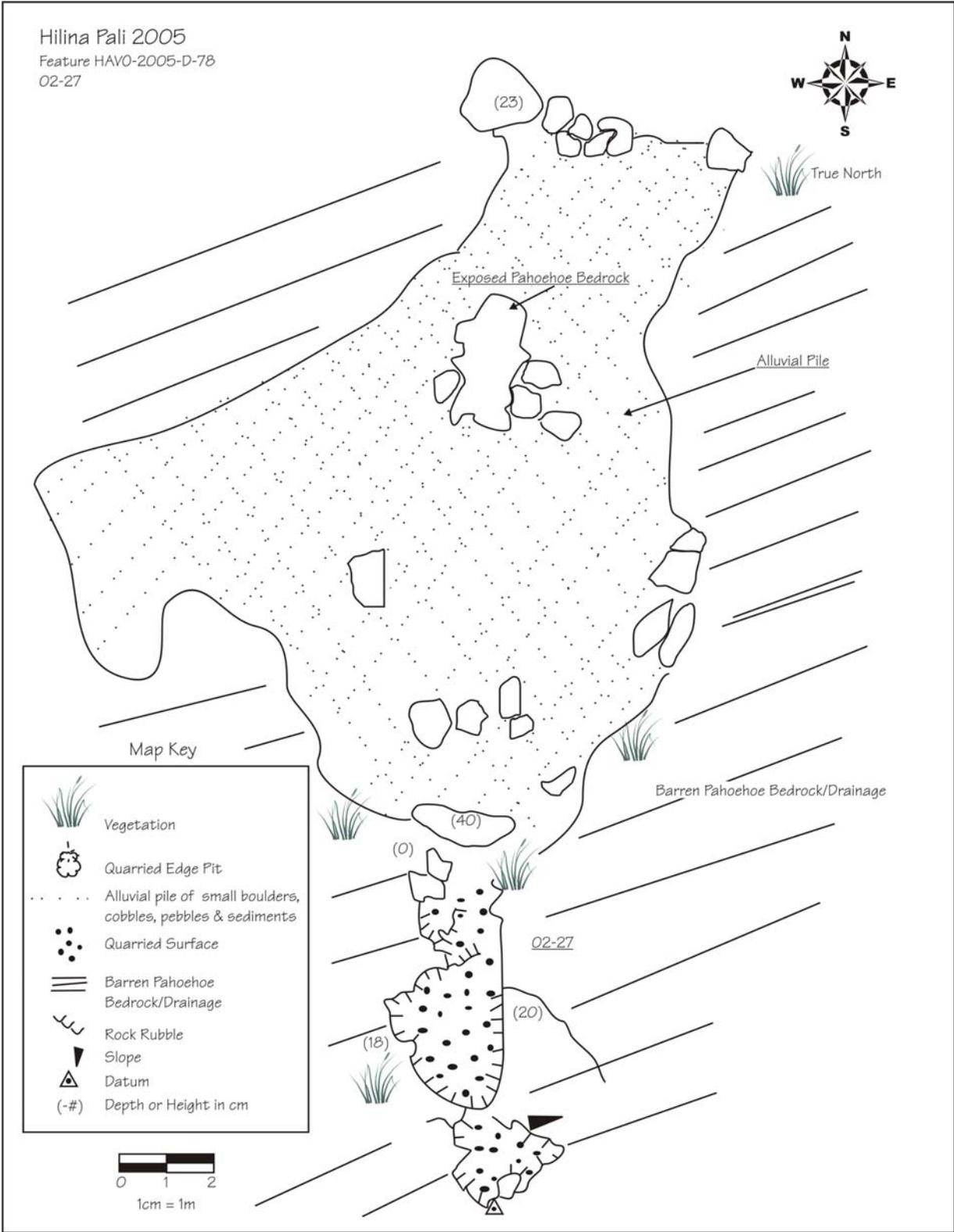
**HAVO-2005-D-79** (Feature 02-28) is a 4.3 m x 65 cm x 30 cm deep quarry. This feature is located centrally within the drainage and is 3 m east of feature 98-819. Quarried edge is on the east, north, west, and south section of the feature. Impacts include floodwater and weathering. Vegetation consists of *pūkiawe*, *a'ali'i*, molasses grass, and red top natal. This feature is in good condition.

**HAVO-2005-D-80** (Feature 02-29 a, b) is a 5.1 m x 3.6 m x 29 cm deep quarry. It is made from small lava tubes and lava blisters. The area appears to be made up of shelly pāhoehoe. 02-29b is a 3.1 m x 50 cm deep quarry on the east side of the drainage. Sub-feature is adjacent to feature 98-836. The quarry trends across the width of the drainage. Impacts are floodwaters, weathering, and vegetation. Vegetation consists of molasses grass, *pūkiawe*, and *a'ali'i*. This feature is in good condition.

**HAVO-2005-D-81** (Feature 02-30) is 4.5 m long with a lower shelf at height 25 cm deep and the top edge at 53 cm deep. It also consists of two small quarried areas with dimensions 1.3 m x 13 cm deep and 80 x 60 x 40 cm deep. The later dimensions include a horizontal surface. The types of impact are floodwater, weathering, and vegetation. The vegetation consists of *pūkiawe*, red top natal, and *a'ali'i*. This feature is in good condition.

**HAVO-2005-D-82** (Feature 02-31) is a 3.2 m x 60 cm x 34 cm high wall. It is constructed with blocky pāhoehoe boulders and cobbles stacked to a height of 1 course. The wall is located on the east side of the drainage. The wall is embedded into a matrix of sand. Types of impact are weathering, seismic, water, and vegetation. The vegetation includes *pūkiawe*, *a'ali'i*, *ākia*, and grasses. This feature is in poor condition.

**HAVO-2005-D-83** (Feature 02-32) is a 1.2 m x 1.4 m x 59 cm high wall. It is constructed with blocky pāhoehoe boulders stacked to a height of 3 rocks high. It is located on a flat area of pāhoehoe bedrock. Rubble suggests wall was 6.5 m long. Impacting includes weathering, water, seismic, and vegetation. Vegetation consists of *pūkiawe*, *a'ali'i*, and grasses. This feature is in poor condition.



**Figure 52. Feature HAVO-2005-D-78, Dam**

**HAVO-2005-D-84** (Feature 02-33) is a 3.75 m x 80 cm x 42 cm high mound. Mound is constructed with pebbles and outlined with blocky pāhoehoe boulders stacked to a height of 1 to 2 rocks high. The mound is curved with the opening to the southwest and built on a shallow pāhoehoe rise and is shaped like a C. The northwest end abuts the base of a tumulus. The interior is made up of pebbles to create a rounded surface. Impact types consist of seismic, weathering, and water. The vegetation of the area includes *pūkiawe*, *a'ali'i*, and grasses. This feature is in good condition.



**Figure 53. Feature HAVO-2005-D-86  
Rock Wall**

Photo Courtesy of the National Park Service

**HAVO-2005-D-85** (Feature 02-34) is a 4.8 m x 60 cm x 38 cm high wall. This wall is constructed with stacked and arranged blocky pāhoehoe boulders with a height of 1 to 2 rocks high. Wall is mainly a 1 course rock line with some stacking. The impacts are weathering, water, seismic, and vegetation. The vegetation consists of *pūkiawe*, *a'ali'i*, fern, and grasses. This feature is in fair condition.

**HAVO-2005-D-86** (Feature 02-35) is a 5 m x 75 cm x 76 cm high wall. It is constructed of basalt slabs stacked to a height of 2 to 3 rocks high. It is located on the west side of the drainage with a matrix of ashy soil. Slabs are upright at the base with the top lying flat. Wall is discontinuous. Impacts include weathering, seismic, and vegetation. The vegetation is sparse with *a'ali'i*, grasses, *pūkiawe*, and sourbush. This feature is in good to fair condition.

**HAVO-2005-D-87** (Feature 02-36) is a 3.5 m x 75 cm x 56 cm high wall. It is constructed of basalt slabs stacked to a height of 1 to 2 rocks high. Feature is located along the natural contour on the west side of the drainage and abuts a matrix of ashy soil on the west and a pāhoehoe outcrop on the east. Slabs are placed upright with a few lying flat. The impacts are vegetation, weathering, and seismic activity. The vegetation is sparse to moderate on the north end and dense further south. Vegetation includes *a'ali'i*, bracken fern, grasses, and *pūkiawe*. This feature is in good to fair condition.

**HAVO-2005-D-88** (Feature 02-37) is a 4.25 m x 1.1 m x 40 cm high wall. Feature is constructed with basalt slabs stacked and laid in alignment. It is located just beyond the west side of the drainage, along a natural contour. West side of wall abuts a matrix of ashy soil and

the southeast end abuts a pāhoehoe outcrop. The wall has slabs that are lying flat with a few upright with stacking 1 to 2 rocks high. The impacts are weathering, seismic, and vegetation. The vegetation includes *a'ali'i*, grass, *pūkiawe*, and sourbush. This feature is in fair condition.



**Figure 54. HAVO-2005-D-97 Dam Wall**

Photo Courtesy of the National Park Service

**HAVO-2005-D-89** (Feature 02-38) is a 2.75 m x 1.6 m x 66 cm high wall. It is constructed with flat lying basalt slabs stacked to a height of 1 to 2 rocks high. The wall is located along the west end of the drainage, on a surface of ropey pāhoehoe and an ashy soil matrix. The alignment is lying across a low point in the drainage. The impacts include weathering, seismic, and vegetation. The vegetation is sparse with *a'ali'i*, grasses, and *pūkiawe*. The feature is in good to fair condition.

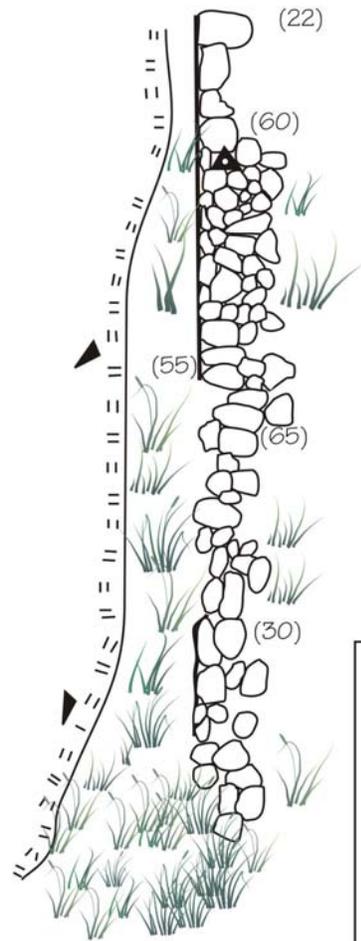
**HAVO-2005-D-90** (Feature 02-39) is a 7.75 m x 1 m x 47 cm high wall. Wall is constructed of upright basalt slabs stacked to a height of 1 to 2 rocks high. The slabs are lain at an angle into the ashy soil

matrix. Feature is located on the west edge of the drainage abutting a pāhoehoe outcrop. The impacts associated with feature are vegetation, weathering, and seismic activity. The vegetation is moderate to dense on the south end of the wall. The south portion appears to be collapsed from dead vegetation. The vegetation includes *a'ali'i*, grasses, and *pūkiawe*. This feature is in good to fair condition.

**HAVO-2005-D-91** (Feature 02-40) is a 1.1 m x 70 cm x 60 cm high mound. The feature is constructed with the stacking of blocky pāhoehoe boulders and cobbles to a height of 3 rocks high. It is located on the east side of the drainage leaning against accumulated soil. This feature could be part of a wall segment. The north end abuts a pāhoehoe rise. The impacts include vegetation, seismic, and weathering. The vegetation is *pūkiawe* and grasses. This feature is in fair condition.

**HAVO-2005-D-92** (Feature 02-41) is a 3.39 x 60 cm x 50 cm high wall. It is constructed with blocky pāhoehoe boulders and cobbles stacked to a height of 1 to 2 rocks high. Feature is located on the east side of the drainage. It abuts a matrix of soil on the east side. The wall is impacted by vegetation, seismic activity, and weathering. The vegetation covers most of the feature with *pūkiawe*, *a'ali'i*, partridge pea, fern, and grasses. This feature is in fair to poor condition.

Hilina Pali 2002  
 HAVO-2005-D-34  
 Feature 98-839, wall  
 April 2005  
 Cartography By J. Burrell



Map Key

	= Pahoehoe Cobbles
	= Faced Pahoehoe Cobbles
	= Datum
	= Direction of Slope
	= Vegetation
	= Pahoehoe Outcrop

Figure 55. Feature HAVO-2005-D-34, Rock Wall

**HAVO-2005-D-93** (Feature 02-42) is a 5.5 m x 75 cm x 34 cm high wall constructed with basalt slabs stacked to a height of 1 to 2 rocks high. It is located on the west side of the drainage with the east side abutting a pāhoehoe outcrop and the west side embedded in a matrix of ashy soil. The impacts include vegetation, weathering, and seismic activity. The vegetation is dense to moderate with *a'ali'i*, bracken fern, grasses, and *pūkiawe*. The vegetation covers a portion of the feature, but the wall is continuous. This feature is in good to fair condition.

**HAVO-2005-D-94** (Feature 02-43) is a 15 m x 1 m x 35 cm high wall. It is constructed with basalt slabs stacked to a height of 1 to 2 rocks high. Feature is located on the west side of the drainage, just northwest of another drainage. It abuts a pāhoehoe outcrop on the east side and an ashy soil matrix on the west side. The basalt slabs are thick and flat lying. The vegetation and soil cover portions of the wall. The impacts include vegetation, weathering, and seismic activity. The vegetation is dense to moderate in places with *a'ali'i*, bracken fern, grasses, and *pūkiawe*. This feature is in fair condition.

**HAVO-2005-D-95** (Feature 02-44) is a 12 m x 70 cm x 42 cm high wall. It is constructed of blocky pāhoehoe rocks stacked to a height of 1 to 2 rocks high. It is located southeast of 02-41. The rocks are cobble and boulder sized. The middle section of the wall is the best preserved. Types of impact include vegetation, seismic, weathering, and water. Vegetation consists of

*pūkiawe*, *a'ali'i*, partridge pea, fern, and grasses. This feature is in fair to poor condition.



**Figure 56. HAVO-2005-D-95, Rock Wall.**

Photo Courtesy of the National Park Service

**HAVO-2005-D-96** (Feature 02-45) is a 221 m X 60 cm X 34 cm high rock wall constructed of porous basalt slabs and cobbles stacked and located along a branch off of a drainage on the west side. The wall is an alignment that meanders with a trend roughly 328 degrees N. The stacking is to a height of 1 to 2 rocks high. The feature is in bad shape with rubble on the south side and no distinct wall along most of the feature. The vegetation is sparse and consists of *a'ali'i*, grasses, and *pūkiawe*.

**HAVO-2005-D-97** (Feature 02-46 A & B) are two walls constructed of stacked blocky pāhoehoe boulders with the dimensions of 3.3 X 3.1 X 0.75 m high. The feature is a two wall segment located on the opposite sides of a narrow NW/SE running portion of an overall N/S running drainage. The wall is built along a N/S axis. The west facing is carefully arranged, made with large blocky pāhoehoe slabs laid flat and large blocky pāhoehoe boulders stacked two rocks high. There is accumulated sand beginning to cover and obscure the facing of the walls. The feature interior is made with mostly small boulders that are stacked approximately 2-4 rocks high to create a fairly level feature surface. There are some large cobbles incorporated into the construction of the feature interior. There is clear edging along the north, south, and east sides (which is more loosely constructed than the west facing). The wall is located on the NE side of the drainage, perpendicular to the drainage edge. The vegetation of the area includes *a'ali'i*, *pūkiawe*, ferns, and grasses. Impacts on the feature include vegetation, seismic activity, water flow, and soil accumulation. The feature is in fair condition.

**HAVO-2005-D-98** (Feature 02-47) is a 35.5 m X 60 cm X 67 cm wall/dam constructed of stacked basalt slabs and boulders. The feature is located in a small, narrow, drainage, crosses the drainage and follows the west side of a natural contour. The dam covers a distance of 2 m and is made up of large boulders with a stacking height of 1 to 2 rocks high. The wall is made of upright and flat lying slabs with a stacking height of 3 rocks high. The wall is in good condition with an excellent profile visible. The wall abuts a matrix of ashy soil on the west side and a pāhoehoe outcrop along the east side. The dam crosses drainage along a low spot and appears to have collapsed at a portion of it on the northwest corner, near a large ohia tree. The wall extends back a distance of 5 m. The feature meanders with the natural contour of the drainage. The drainage has a trend of a roughly 330 degrees true north along most of the wall. Both sides of the dam appear to be built up, almost like an anchor. The northwest side has collapsed due to an 'ōhi'a tree. The vegetation of the area includes *a'ali'i*, bracken fern, molasses grass, 'ōhi'a, *pūkiawe*, and grasses. The impacts on the feature include weathering, seismic activity, and vegetation. The feature is in fair condition.

**HAVO-2005-D-99** (Feature WPT 119) is a 23 m X 1.56 m X 86 cm in height rock wall. The wall is dry stacked 3-5 courses high with a nice vertically faced wall in the western side of the wall. The wall trends north to south and curves to the east and the southern end. The wall functions as a retaining wall. The wall runs along a pāhoehoe outcrop that lies west of the feature, with the wall being on the east side of the drainage. To the east of the wall there is vegetation. This feature is 10 m south of feature WPT 120. Potential impacts to this feature include seismic activity, fire, erosion and vegetation. Vegetation surrounding this feature includes *pūkiawe*, grasses, 'ōhi'a and *a'ali'i*. This feature is in excellent condition.

**HAVO-2005-D-100** (Feature WPT 120) is a 6.1 m X 58 cm wide X 88 cm in height rock wall constructed with pāhoehoe cobbles and boulders dry stacked 3 courses high and trending north to south along the pāhoehoe outcrop. The outcrop is to the west of the feature with the wall running along the east side of the drainage. The wall functions as a retaining wall for the drainage with the water being channeled over a pāhoehoe outcrop. Potential impacts to the feature include seismic activity, erosion and vegetation. Vegetation surrounding this feature include *pūkiawe*, 'ōhi'a, grasses and *a'ali'i*. This feature is in excellent condition.

**HAVO-2005-D-101** (Feature WPT 124) is a 2.3 m x1.2 m wide X 50 cm in height rock wall. This feature is a relatively small wall located on the southwest side of the drainage just across from feature 98-829. The feature is constructed from small to large pāhoehoe cobbles stacked 2-3 courses high. There is an 'ōhi'a tree growing on the southern end of the wall. To the south approximately 2m is an excavated channel feature 02-02. Potential impacts to this feature include flooding and vegetation. Vegetation surrounding this feature includes 'ōhi'a, molasses grass and a'ali'i. This feature is in good condition.

**HAVO-2005-D-102** (Feature 03-01) is a 9.4 m X 65 cm X 80 cm in height wall located on the east side of the drainage following the natural contours. Slabs are upright and stacked 2-3 courses high. The east side of the wall is built up with a matrix of ashy soil and the west side is abutting a pāhoehoe outcrop. Feature located on the outside bend of a curve in the drainage.



**Figure 57. HAVO-2005-D-103, Quarry**

Photo Courtesy of the National Park Service

Some slabs on the top are flat laid. Vegetation is dense on the north end and moderate to sparse on the south end. Potential impacts to this feature are weathering and seismic activity. Vegetation surrounding this feature includes molasses grass, bracken fern, pūkiawe and a'ali'i. This feature is in fair condition.

**HAVO-2005-D-103** (Feature 03-02) is a 15 m long X 2.5 m X 20-60 cm in depth quarry located approximately 2 m south of features 98-829 and WPT 124. There are large pāhoehoe boulders along the southwest portion of the channel 1 course high and 4.5 m X 1 m wide X 50 cm in height. This feature is

potentially being impacted by erosion. Vegetation surrounding this feature include pūkiawe, broomsedge, molasses grass, 'ōhi'a and a'ali'i. This feature is in good condition.

**HAVO-2005-D-104** (Feature 03-03) is a 3 cm in diameter and 10 cm in depth group of holes drilled into the pāhoehoe bedrock along the drainage built by the CCC. The holes were possibly drilled by geologists in order to determine the age of the lava flows and were probably made more recently. Two of the holes are on the north side of the hole cluster on a pahoehoe ledge at the top vertically facing the sky. The next two holes are more south and are drilled into a pāhoehoe ledge. The last two holes are the furthest south and down slope drilled into the side of a pāhoehoe bedrock ledge and are the lowest of all the holes. The distance from the most

northern holes and the most southern holes is 3.4 m. The distance in elevation of the most northern holes to the most southern holes is 60 cm. To the east of the holes is some bedrock with some pāhoehoe boulders stacked two courses high in a wall formation. They probably function as a retaining wall for CCC drainage and is located along the east side of a pāhoehoe outcrop. The wall trends north to south and has the dimensions of 3.2 m x 1.3 m X 1 m in height. This feature is potentially being impacted by erosion. Vegetation surrounding this feature includes grasses, *pūkiawe* and *a‘ali‘i*.

**HAVO-2005-D-105** (Feature 03-04) is a 5.5 m X 2.7 m X 72 cm in height dam on the east side of the drainage and a 2.6m long X 6 m wide X 77 cm in height dam on the west side. The eastern portion is larger than the west side and is nicely constructed. At the northern face of the structure there is a nice facing made of blocky pāhoehoe slabs turned upright to utilize their size and shape. The structure is rectangular in shape and trends northeast to southwest along a pāhoehoe outcrop that runs North to South. The function of the structure is to channel water over the pāhoehoe outcrop. This feature is dry stacked 3-4 courses high. On the West side of the pāhoehoe outcrop directly across from the Eastern portion of the feature is a dam/wall remnant. There are 6-7 large pahoehoe boulders with a few cobbles remaining and appears to be very scattered and disturbed, however it is clear that at one time something of a wall once existed there. Erosion, seismic activity and vegetation are potentially impacting this feature. Vegetation surrounding this feature includes molasses grass, *pūkiawe*, ferns, *‘ōhi‘a* and *a‘ali‘i*. This feature is in excellent condition.



**Figure 58. HAVO-2005-D-106, close up of quarry.**

Photo Courtesy of the National Park Service

**HAVO-2005-D-106** (Feature 03-05) is a 6.5 m X 80 cm wide X 70 cm in height rock wall and quarry located on the West side of a pāhoehoe outcrop trending north to south. This feature is constructed with mostly pāhoehoe boulders with some cobbles and is dry stacked 2-3 courses high. The pāhoehoe outcrop runs north to south so the wall functions as a retaining wall for water. To the east of the rock wall 15m and spanning north about 25 m and south 25 m is quarried pāhoehoe bedrock where CCC probably quarried the rocks used to build this wall. This

feature is being invaded by vegetation including *pūkiawe*, grass, ferns and *a‘ali‘i*. Potential impacts to this feature include erosion, seismic activity and vegetation. This feature is in fair condition.

**HAVO-2005-D-107** (Feature 03-06) is an 8.5m X 50-110 cm wide X 40-60 cm in height rock wall. This is a very long rock wall built on the western edge of a pāhoehoe outcrop. The wall trends northwest-southeast. The southern portion of the wall is built with very blocky pāhoehoe boulders that are dry stacked very neatly so that they fit together nicely. The construction is very impressive. This portion of the wall is very linear approximately 30m long. After 30 m the wall is constructed with pāhoehoe boulders and also a lot of pahoehoe cobbles. The wall is not as intact and looks slightly collapsed and is invaded by vegetation. This wall is dry stacked 3-4 courses high. The function of the wall is as a retainer for water. To the west of the wall there are sand dunes. To the east of the wall is a pāhoehoe outcrop where the water is encouraged to flow into the drainage over the pahoehoe lava flow. Seismic activity, erosion and vegetation are potentially impacting this feature.

Vegetation surrounding this feature includes *pūkiawe*, *‘ōhi‘a*, ferns, grasses and *a‘ali‘i*. This feature is in excellent condition



**Figure 59. Feature HAVO-2005-D-107, rock wall**

Photo Courtesy of the National Park Service

**HAVO-2005-D-108** (Feature 03-07) is a 25 m X 3 m X 70 cm in height rock wall located along the west side of a pāhoehoe outcrop. This feature is constructed of blocky pāhoehoe boulders and cobbles dry stacked 3-4 courses high. To the east of the wall is pahoehoe bedrock and to the west of the wall are sand dunes. The wall trends North to South and functions as a retaining wall. The Northern portion of the wall is very

collapsed and invaded by vegetation. Potential impacts to this feature include seismic activity, vegetation and erosion. Vegetation surrounding this feature includes *pūkiawe*, grasses, ferns and *‘ōhi‘a*. This feature is in good condition.

**HAVO-2005-D-109** (Feature 03-08) is a 13 m X 75 cm X 100 cm in height rock wall trending north to south. This feature is dry stacked 5 courses high and constructed of mostly pāhoehoe boulders with some cobbles and built along the western edge of a pāhoehoe outcrop. The function of this feature is as a retaining wall for the drainage. Behind the wall, to the west there are sand dunes. There is a large *‘ōhi‘a* tree growing right in the middle of the wall. To the east of the wall lies a pāhoehoe outcrop that the water drains over. Potential impacts to this feature include seismic activity, erosion and vegetation. Vegetation surrounding this feature include *‘ōhi‘a*, *pūkiawe*, grasses, ferns and *a‘ali‘i*. This feature is in good condition.

**HAVO-2005-D-113** (Feature 98-859) is a 5.3 m x 2.6 m X 80 cm in height dam. This feature functions as a dam and is constructed from dry stacked pāhoehoe boulders and cobbles stacked 3-4 courses high. This dam is collapsed and looks as if water flow or seismic activity has possibly disturbed it. This dam is built on the eastern side of the pāhoehoe flow. Directly across from the dam on the other side of pahoehoe flow there are a few stacked boulders and appears to be a remnant of a dam or retaining wall, however it is unclear. On the north side of the dam are large blocky pāhoehoe slabs upright and functioning as a facing for that side of the dam. Seismic activity, vegetation and erosion are potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, molasses grass, *‘ohi‘a* and *a‘ali‘i*. This feature is in good condition.

**HAVO-2005-D-117** (Feature 02-04) is a 1.7 m x 1.1 m x 1.09 m high mound on a tumulus. Mound is constructed with blocky pāhoehoe cobbles stacked to a height of 1 to 3 rocks high. The mound is 23 cm higher than the top of the tumulus. Rubble is located at the base of the tumulus (N-NE side). Artifacts include 18 glass fragments, metal fragments, gun caps, and shotgun bullet casings. Feature is impacted by weathering and seismic activity. Vegetation includes *pūkiawe*, *a‘ali‘i*, and grasses. This feature is in fair condition.

**HAVO-2005-D-118** (Feature 02-05) is a 3.2 m x 1.3 m x 28 cm high quarry pit. This feature is located on the top of a NW facing slope of a shallow pāhoehoe rise. Feature is a quarried area of pāhoehoe bedrock. The rocks have been removed from bedrock to create a shallow pit in the shape of a bow-tie. A few quarried stones are located in the center of the feature. This feature is impacted by floodwater, weathering, and vegetation. The vegetation includes *a‘ali‘i*, grass, and partridge pea. This feature is in good condition.

**HAVO-2005-D-119** (Feature 02-06) is a 15.8 m x 5.3 m x 63 cm high mound. The mound is constructed with sand and pāhoehoe boulders, cobbles, and gravel. Mound is elongated and trending N-S. Located in the center of the drainage with facing on the north and south ends. Impacts include seismic, weathering, water, and vegetation. The vegetation consists of *pūkiawe*, *a‘ali‘i*, grasses, and fern. This feature is in good to fair condition.

**HAVO-2005-D-120** (Feature 98-861) is a 70 cm long x 80 cm wide X 70 cm in height rock cairn constructed with dry stacked pāhoehoe cobbles and boulders 6 courses high. The cairn is located on the eastern side of the drainage. Vegetation, seismic activity, and erosion are potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, grasses, *‘ōhi‘a* and *a‘ali‘i*. This feature is in excellent condition.

The following three sites were discovered by chance during a separate field expedition on a different project. The petroglyphs clearly identify the relation of these features with the other CCC features although they are spatially distinct from each other (see figure 10). This could potentially be the location of the CCC temporary camp located during the time that they were working in the area.

### Site Number 50-10-62-24523

**HAVO-2005-D-110** (Feature 03-12) is a 45 cm X 30 cm pecked petroglyph. The petroglyph is pecked from pāhoehoe bedrock and is comprised of the letters "J. M." and underneath these letters are the letters "C.C.C. Camp". Also within a 5 meter vicinity of this petroglyph are three others. One reads the initials "E C H," one is not legible and the other one reads H M L with the letters connected. The petroglyph is large and visible and located near a rock shelter overhang opening (03-14) as well as another C.C.C petroglyph recorded in (03-17). The area the feature is located in is vegetated by *pūkiawe*, *‘ōhi‘a*, *a‘ali‘i* and grasses. It is in excellent condition (see figure 61).

### Site Number 50-10-62-24525

**HAVO-2005- D-112** (Feature 03-17) is a 1.65 m X 1.3 m pecked petroglyph pecked on an open slab of pāhoehoe bedrock. The petroglyph is comprised of the letters "R.E.D. DENISON, CCC 1940". This petroglyph is found near another CCC petroglyph recorded in 03-12 and a lava tube recorded in 03-14. The feature is in an area vegetated by *pūkiawe*, *a‘ali‘i*, *‘ōhi‘a*, and grasses. It is in excellent condition.



**Figure 60. Site Number 50-10-62-24525, HAVO-2005-D-112, "1940" Petroglyph**

Photo Courtesy of the National Park Service

### Site Number 50-10-62-24524

**HAVO-2005-D-116** (Feature 03-14) is a overhang/rock shelter formed in the natural pāhoehoe flow. The dimensions of the entrance sink are 7 m X 5 m X 1-3 m deep. The opening of the tube is very circular and is being invaded by vegetation. On the east side of the tube opening is a

small room with the dimensions 6 m X 2.8 m X 1.25 m high. In this room there is a deliberately made table constructed from a large pāhoehoe slab (approximately 1m X 1.5 m) that rests on top of five stacked pāhoehoe blocks. The table is approximately 0.5 m high from the tube floor. The tubular portion of the cave extends towards the south and is full of goat bones. It goes back approximately 15 meters and possibly continues but the continuation is not accessible from this portion of the tube. The southern portion of the rock shelter has very impressive geological formations at the entrance on the smooth pahoehoe walls. The formations are smooth and includes a pillar and a complex web of lava flow formations. This section of the rock shelter extends back approximately 14 meters. This tube would serve as a good shelter and found near two CCC petroglyphs. The vegetation of the area includes *a'ali'i*, *'ōhi'a*, *pūkiawe*, and grasses. The impacts of the feature include goats, vegetation, and human impacts and the feature is in good condition.



**Figure 61. Site Number 50-10-62-24523, HAVO-2005-D-110, Petroglyph**  
Photo Courtesy of the National Park Service

Hilina Pali 2005  
 Feature HAVO-2005-D-116  
 03-14

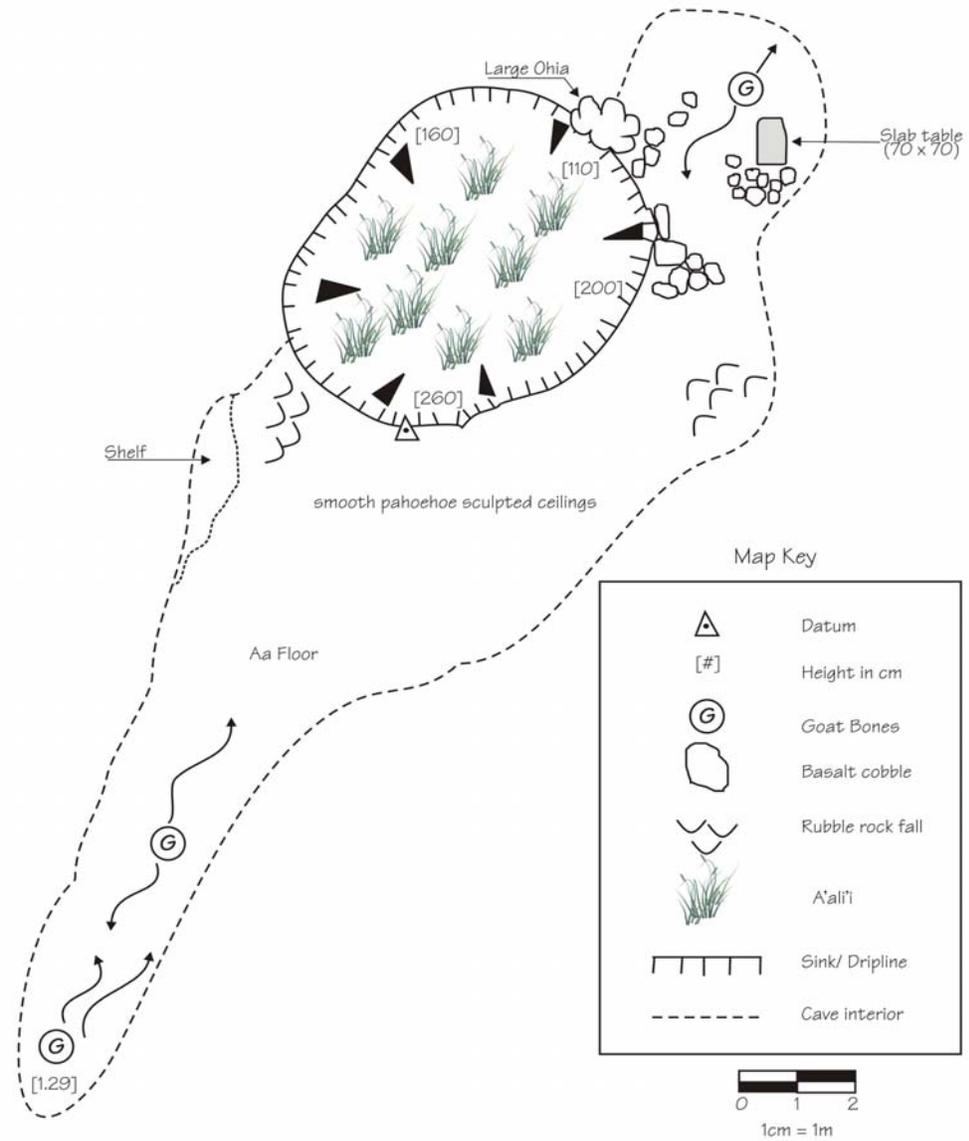
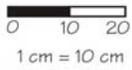
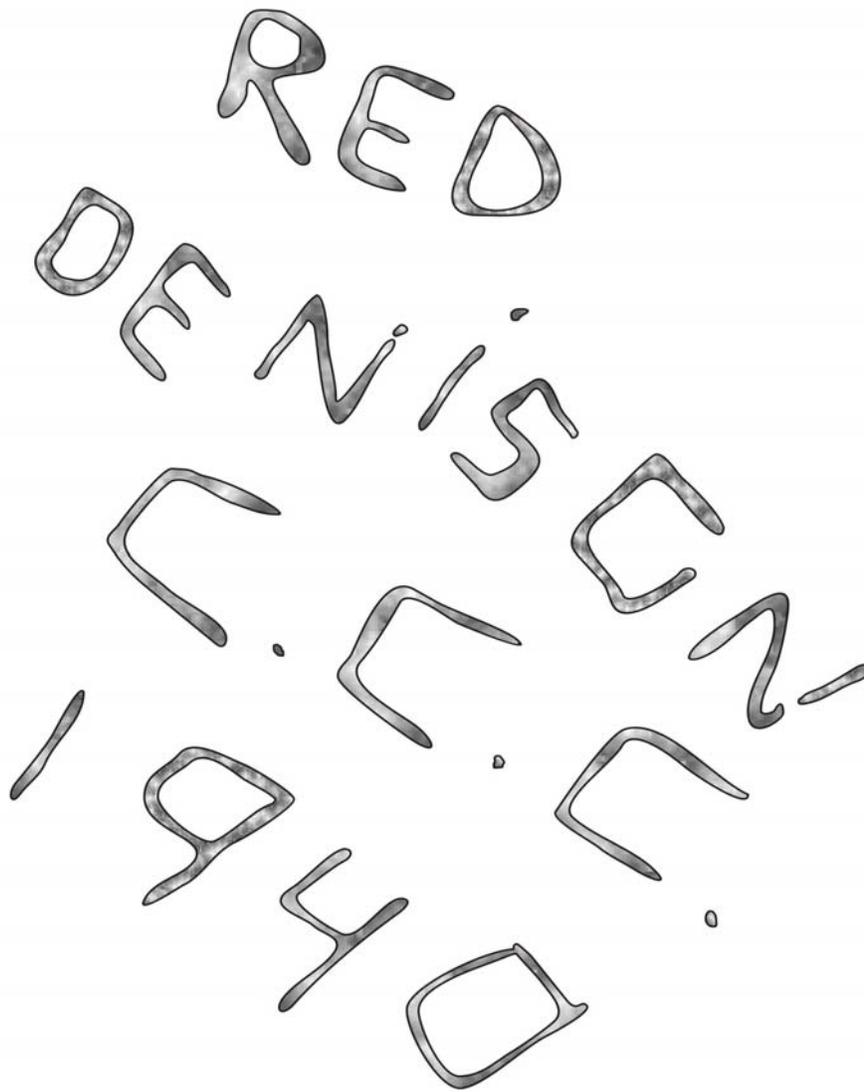
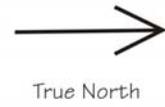


Figure 62. Site Number 50-10-62-24524, Feature HAVO-2005-D-116, Rock Shelter

Hilina Pali 2005  
Feature 03-17  
HAVO-2005-D-112



Pecked Petroglyph

**Figure 63. Site Number 50-10-62-24525, Feature HAVO-2005-D-112, Petroglyph**

## **Additional Features**

The following sites were included in the Hilina Pali Survey although the features that are located within these site boundaries are not related to CCC activities (with the exception of features HAVO-2005-D-111, 114, and 115 which are CCC features of the original Hilina Pali Road). The features within these sites are prehistoric and historic features not affiliated with the CCC.

The location of these sites is further north of the CCC features on the west side of the Hilina Pali road in the upper portion of the survey area (see figure 76.). The site boundaries were identified during the Footprint research and the original recordation and location of the features took place in 1998 from the work of Warren Wulzen (see figure 3). The majority of these features are likely prehistoric and are associated with the activities in the Ka'u Desert. The Ka'u Desert is an area that was traversed often and likely used as a cross roads and not an area of permanent habitation due to the harsh environmental conditions of the desert. Many trails and temporary habitations shelters are the evidence of the past human activities of the area which are the primary feature types identified during this survey.

The feature types include:

**Worn trails** which are paths visible on the lava flow where people have walked over an extended period of time which leaves a wear mark over the flow. It usually appears darker and rugged than the surrounding lava flow. The worn pattern suggests that the trail is well established and used regularly.

**Ahu or cairn marked trails** which are paths across the lava flow marked with cairns which consists of stacked rocks forming a small pile used as a marker. The trail can be easily followed because the cairns mark the way.

**C shapes** which are temporary habitation enclosures that are used to protect one from the elements. The feature is shaped like a C and is constructed of rocks stacked in a semicircular "wall."

**Lava blisters** are small cave like features in the lava that form a temporary shelter. Often they are located in a bubble in the lava where there may be a naturally formed opening or a man made opening. These are different from caves in that they do not have a dark zone and that they have small interior space.

**Chill glass quarry** is an area of resource procurement taken from a lava flow that cooled at a rate in which the surface was left glassy. The surface is chipped away or quarried and the quarried rocks are used for tools.

In addition to the prehistoric features some historic features also were recorded which include a benchmark, a metal post and three areas where the remnants of the Old Hilina Pali road built by the CCC in 1939 and 1940 are visible.

During the original 1998 Warren Wulzen survey minimal amounts of information was obtained for these features other than a feature type and a GPS point. The site number boundaries were later identified during the Footprints survey research in 2000. In 2003 detailed information was gathered on the features which include feature descriptions, photos, and maps for some of the features. Although the majority of these features are not related to the CCC features they share in common the fact that all of the features are located off of the Hilina Pali Road and can be accessed from the road (see figure 76).

**Site Number 23026** consists of one temporary enclosure.

**HAVO-2005-D-121** (Feature 98-45) is a 2.9 m x 3.1 m and 0.88 m in height enclosure. This feature is a small enclosure highly inundated with vegetation. The enclosure is constructed with pāhoehoe cobbles and small boulders stacked 2 courses high. The shape if this enclosure is difficult to see because the vegetation is growing in, on and over this feature, however, it appears to be somewhat circular in shape. Vegetation and seismic activity are potentially impacting this feature. Vegetation surrounding this feature includes *ōhi'a*, *pūkiawe*, molasses grass, broomsedge and *a'ali'i*. This feature is in fair condition.

**Site Number 23027** consists of 5 walls associated with temporary shelters, 3 cairns, 2 enclosures, 1 metal post, 3 rock piles, 1 trail, 1 blister, 1 C-shape enclosure, and 1 chill glass quarry.

**HAVO-2005-D-122**

(Feature 98-35) is a 3.3 m X 1.05 cm X 0.50 m in height rock wall constructed with pāhoehoe cobbles and boulders very loosely stacked 1-2 courses high. The wall is located southeast of a pāhoehoe tumulus and may have served as a temporary shelter. To the northwest of the feature it appears that there is some possible excavation. Seismic activity and vegetation are potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, *ōhi'a*, grasses and *a'ali'i*. This feature is in fair condition.



**Figure 64. HAVO-2005-D-122. Rock Wall**  
Photo courtesy of the National Park Service

**HAVO-2005-D-123** (Feature 98-36) is a 3.5 m long X 1.7 m wide X 0.55 m in height rock wall constructed with very loosely stacked pāhoehoe cobbles and boulders, most likely collapsed. Presently the wall is stacked 1-3 courses high and located just west of a pāhoehoe tumulus. This feature probably served as a temporary shelter. Potential impacts to this feature include vegetation and seismic activity. Vegetation surrounding this feature includes *pūkiawe*, grasses, *‘ōhi‘a* and *a‘ali‘i*. This feature is in fair condition.

**HAVO-2005-D-124** (Feature 98-37) is a 13.87 m long X 3.4 m wide X 0.27 m in height enclosure built up against a tumulus so that the tumulus encloses the open part of the c-shape. It is constructed with mostly pāhoehoe boulders and some cobbles stacked very loosely 1-4 courses high probably due to collapse. The wall also contains a few boulder sized chilled glass slabs. The tumulus is on the southwest side of the feature. Presently the middle of the c-shape is being invaded by vegetation. Seismic activity and vegetation are potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, grasses, *‘ōhi‘a* and *a‘ali‘i*. This feature is in fair condition.

**HAVO-2005-D-125**

(Feature 98-40) is a 1.5 m wide X 4 m tall metal post and sign placed on top of a high pāhoehoe tumulus with 4 metal sheets sticking out of the top uniformly pointing in each direction. The marker, or flag is cemented into the top of the tumulus and surrounded by walls. In each metal sheet there is approximately 8 uniform holes. The metal is corroded and rusted. This site is named Pu‘u Ohale and, according to Don Swanson, was placed there by the Hawaiian Territorial Survey that took place in the early part of the 20<sup>th</sup> century. These surveys took place to mark boundaries as well as make topographic



**Figure 65. HAVO-2005-D-125. Pu‘u Ohale.**

Photo courtesy of the National Park Service.

maps. In the cement there are the words “Pu‘u Ohale” and “HTS 1938.” Around this feature there are many broken bottles and old rusted aluminum cans. There is a temporary shelter built around the tumulus which is described in feature HAVO-2005-D-128. Potential impacts to this feature include seismic activity, corrosion and human. Vegetation surrounding this feature include *pūkiawe*, *‘ōhi‘a* and *a‘ali‘i*. This feature is in good condition.

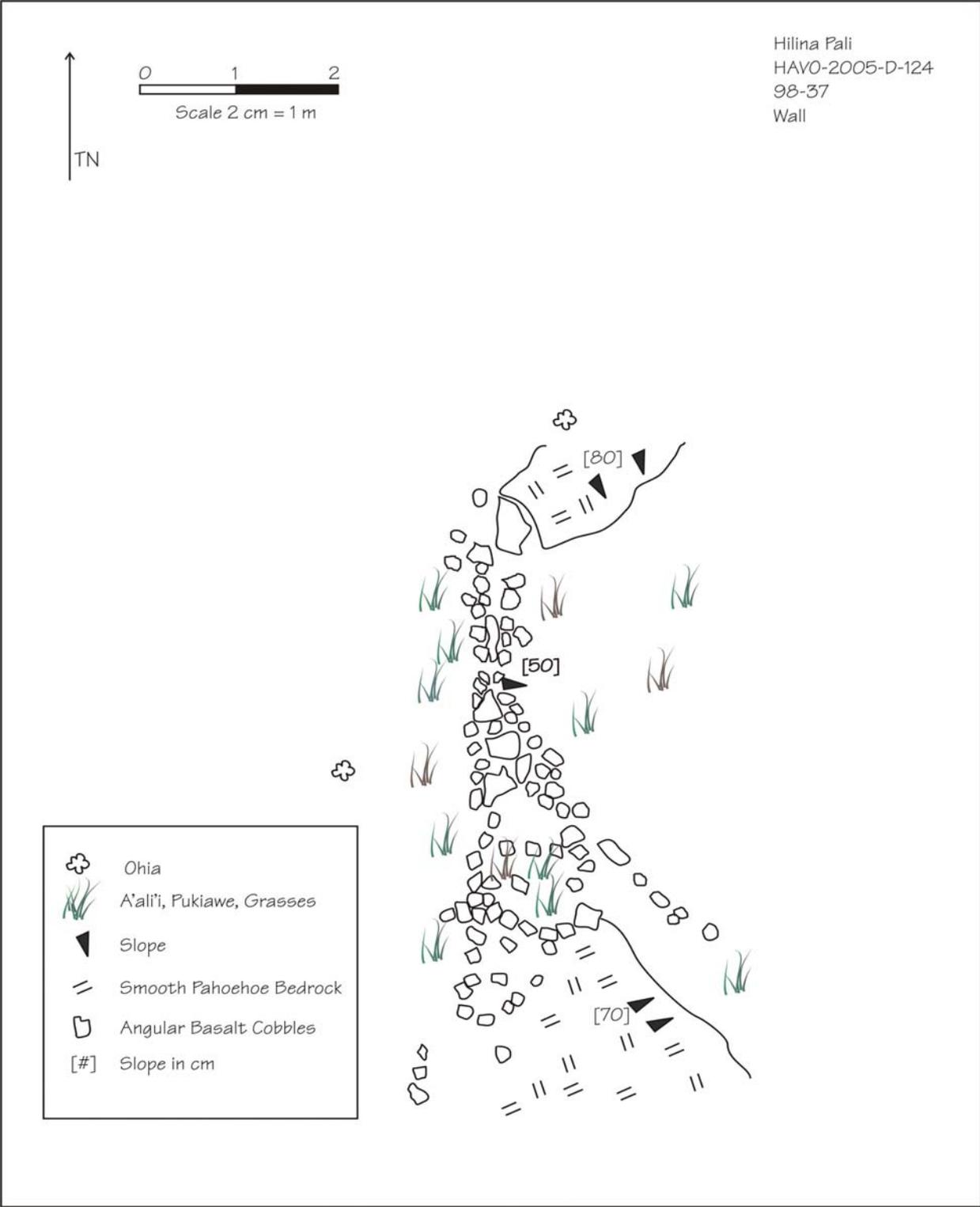
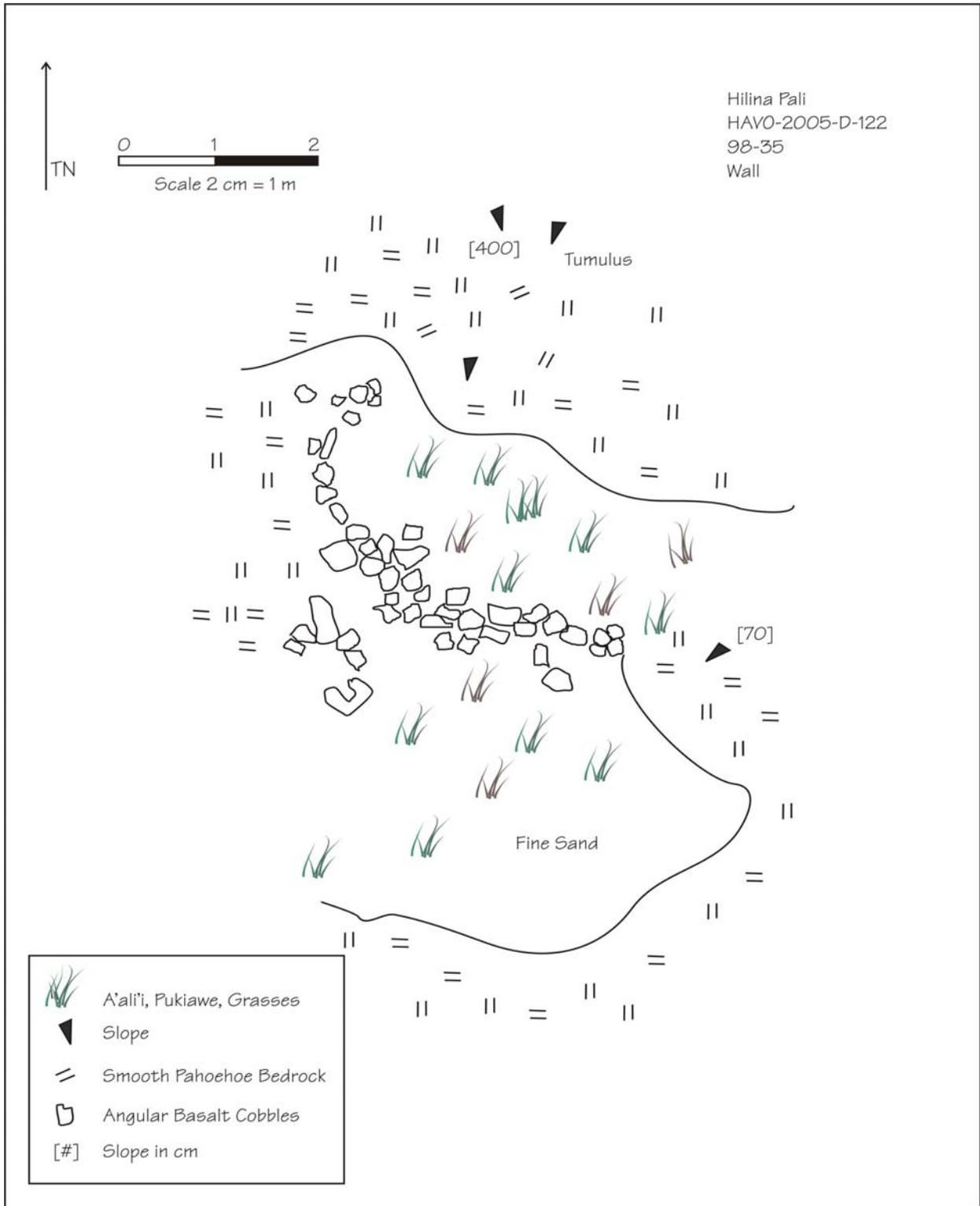


Figure 66. HAVO-2005-D-124, Rock Wall.



**Figure 67. HAVO-2005-D-122, Rock Wall**

**HAVO-2005-D-126** (Feature 98-66) is a 0.8 m long X 0.4 m wide X 0.4 m deep blister that formed from pāhoehoe lava flow. The opening in the flow is small and could have possibly been opened up more by human activity. It is a small blister but possibly big enough to fit someone inside that is lying down. Therefore it could function as a sleeping shelter. There are goat bones inside the blister and 15 m from blister there is a rock pile/ahu that is described in feature 98-54. Feature 98-66 could potentially be impacted by goats and erosion and is surrounded by *pūkiawe*, *‘ōhi‘a*, and *a‘ali‘i*. It is in good condition.



**Figure 68. HAVO-2005-D-126. Lava blister and possible temporary shelter**

Photo courtesy of the National Park Service

**HAVO-2005-D-127**

(Feature 98-304a) is a 6 m x 3.25 m x 32 cm high rock concentration. It is constructed of basalt cobbles and blue glassy pāhoehoe. This sub-feature is located in the south portion of the feature with the datum. It is located on a slope to the east-southeast and a pāhoehoe outcrop with an opal and gravel matrix. The blue glassy pāhoehoe is randomly distributed within the basalt cobbles. The southeast portion is disturbed by an *‘ōhi‘a* tree. Most of the cobbles are embedded into the matrix. **98-304b** is a 5.75

m x 4.25 m x 25 cm high rock concentration. It is located on the east end of the feature within a substrate of pāhoehoe outcrop, opal, and gravel. The southeast portion has nice exposure of a blue glassy pāhoehoe outcrop. The south portion could be disturbed by an *‘ōhi‘a* tree. **98-304c** is a 2.5 m x 2.25 m x 33 cm high rock concentration of loose and embedded basalt cobbles and a few blue glassy pāhoehoe cobbles. This sub-feature is located on the east edge of a tumulus in the northwest portion of the feature with a slope in the east-southeast direction. Matrix is pāhoehoe with opal and gravel. The vegetation is sparse and does not appear to be affecting the feature. The rock concentrations are impacted by seismic, weathering, and vegetation. The vegetation consists of *a‘ali‘i*, *pūkiawe*, *‘ōhi‘a*, and grasses. This feature is in good to fair condition.

**HAVO-2005-D-128** (Feature 98-305) is a 4.5 m x 1.4 m and 1 m in height enclosure. The enclosure abuts a pāhoehoe tumulus that is north of the feature. On top of the tumulus is a pu‘u ohale, see feature 98-40. The enclosure curves in shape and is made of huge pāhoehoe cobbles and boulders stacked up to 5 courses high. Inside the enclosure there are many loose pāhoehoe

rocks. Around the feature there are many broken bottles and some old aluminum cans. Potential impacts to this feature include seismic activity, vegetation and human. Vegetation surrounding this feature includes *pūkiawe*, 'ōhi'a and a'ali'i. This feature is in good condition.

**HAVO-2005-D-129** (Feature 98-306) is a 5.2 m x 1 m and 0.3 m in height wall with excavated pit. The wall is constructed on the southeast side of a pāhoehoe tumulus. The wall is in bad shape and very collapsed. The wall was constructed with pāhoehoe boulders and cobbles stacked 1-2 courses high and scattered. There is an excavated pit on the north side of the feature and could potentially have been the source of the rocks used to build the wall. This feature most likely served as a temporary shelter. Potential impacts to this feature include seismic activity and vegetation. Vegetation surrounding this feature includes *pūkiawe*, 'ōhi'a, grasses and a'ali'i. This feature is in poor condition.

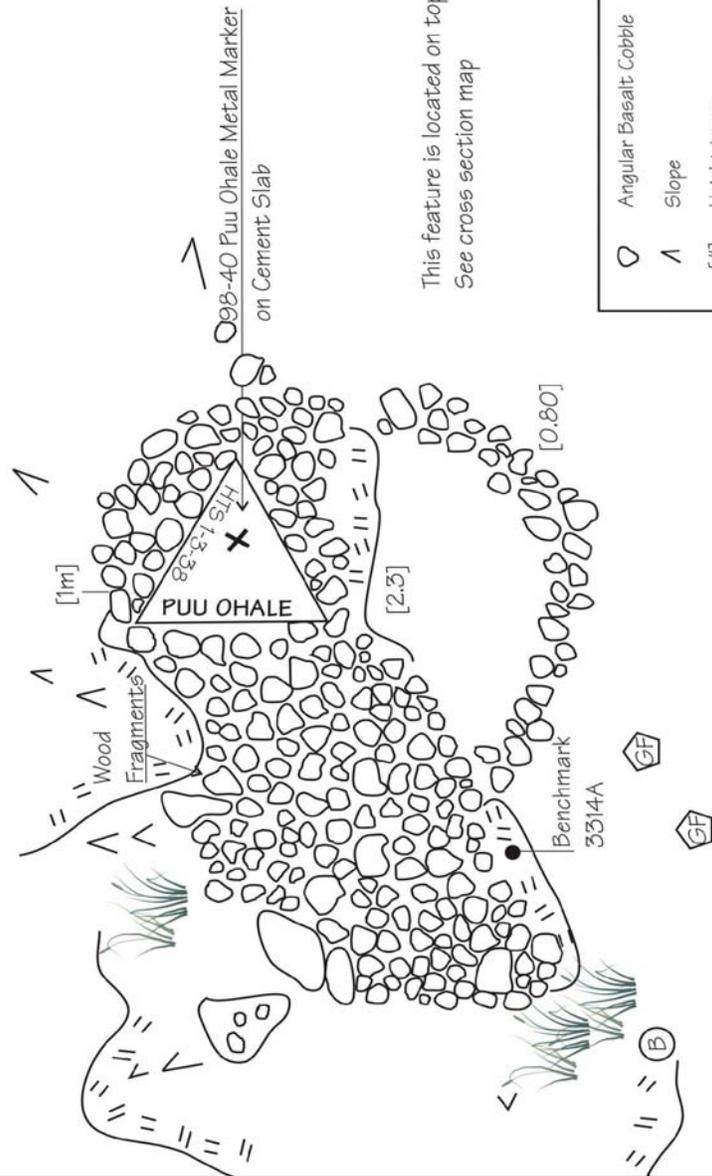
**HAVO-2005-D-130** (Feature 98-307) is a 3.3 m X 0.95 cm and 15 cm in height wall constructed from pāhoehoe cobbles and boulders stacked 1-2 courses high. The wall appears to have collapsed. The wall is built on the southwest side of a pāhoehoe tumulus and most likely functioned as a temporary shelter. Seismic activity and vegetation are potentially impacting this feature. Vegetation surrounding this feature includes *pūkiawe*, 'ōhi'a, grasses and a'ali'i. This feature is in fair condition.

**HAVO-2005-D-131** (Feature 98-308) is a 2.4 m x 2.4 m and 27 cm in height c-shape constructed with small blocky pāhoehoe cobbles, some of which are chilled glass. The open part of the c-shape faces northeast. The pāhoehoe rocks are stacked 1-2 courses high and looks as if it is collapsed. Located approximately 10 m to the south is a larger enclosure recorded as feature 98-37. Potential impacts to this feature include seismic activity and vegetation. Vegetation surrounding this feature includes *pūkiawe*, 'ōhi'a, grasses and a'ali'i. This feature is in fair condition.

**HAVO-2005-D-132** (Feature 98-309) is a 45 cm x 60 cm and 123 cm in height rock cairn and possible bench marker. The cairn was made of stacked 3 courses high with a small wooded stake through the middle of a cairn and sticking out the top. To the west of the cairn there is a metal pin in the ground that has been cemented in. Sticking out the cement is a metal marker with the numbers 6808. The feature is 10-m southeast of the great crack. Potential impacts to this feature include seismic activity and human. Vegetation surrounding this feature includes *pūkiawe*, grasses, 'ōhi'a and a'ali'i. This feature is in excellent condition. (Feature 98-309a) is a 2.85 m x 1.4 m x 11 cm high mound. 98-309b is a 2.2 m x 1.4 m x 15 cm high mound. It is constructed of basalt cobbles, pebbles, and boulders. There are leveled areas above, below, and between these two linear rock arrangements. The rocks are tightly arranged and deeply embedded in a sand and cinder substrate. The feature is impacted with seismic activity and weathering. The vegetation present includes *pūkiawe*, a'ali'i, and grasses. This feature is in fair condition.

**HAVO-2005-D-133** (Feature 02-01) is a 0.55 m long x 0.30 m wide X 0.25 m in height ahu placed on top of a pāhoehoe tumulus. The ahu appears to be collapsed and is now constructed with 3 pāhoehoe cobbles stacked 1 course high and placed on top of a crack. This feature is potentially being impacted by seismic activity. Vegetation surrounding this feature includes *pūkiawe*, 'ōhi'a and a'ali'i. This feature is in fair condition.

Hilina Pali  
 HAVO-2005-D-128  
 98-305



This feature is located on top of a very high tumulus  
 See cross section map

- Angular Basalt Cobble
- Slope
- Height in cm
- Battery
- Glass Fragments
- Smooth Pahoehoe Basalt
- Fukiawe, Ohia, Grasses

Figure 69. HAVO-2005-D-125 and HAVO-2005-D-128

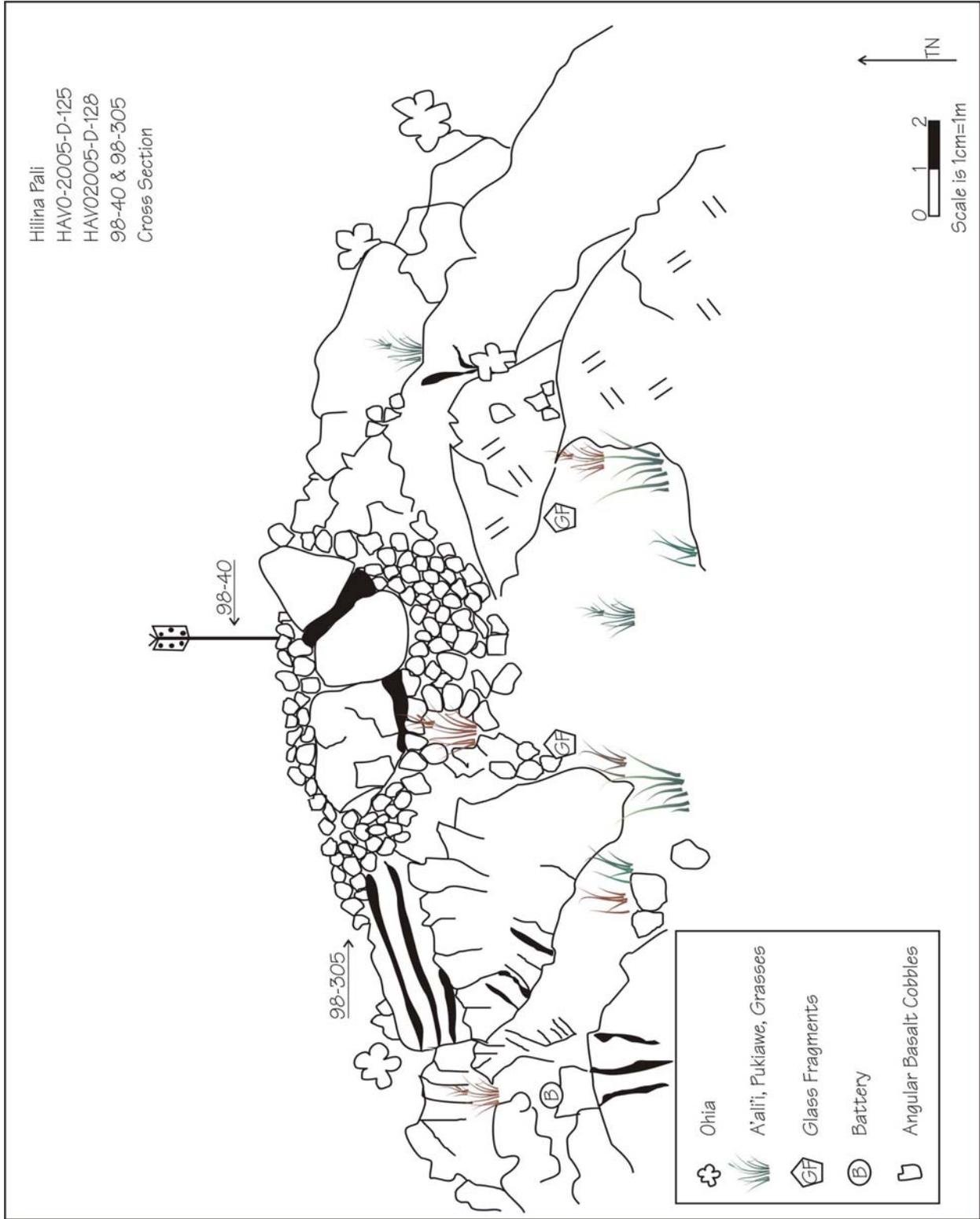


Figure 70. HAVO-2005-D-125 and HAVO-2005-D-128, Cross Section View.

**HAVO-2005-D-134** (Feature 02-02) is a 11 m X 3 m x 0.23 m high chilled glass quarry. This feature includes a scatter of blocky pāhoehoe pebbles and cobbles. It is located on a gentle easterly-facing slope. A few quarried cobbles with a glass surface are within feature. The volcanic glass is in a light to moderate scatter with no indications of debitage. The non volcanic glass rocks are 1-2 rocks high. Impacts include weathering and vegetation. Vegetation includes 'ōhi'a, pūkiawe, a'ali'i, molasses grass, and unknown species of grass. This feature is in fair condition.

**HAVO-2005-D-135** (Feature 02-03) is a 1.2 m long X 60 cm wide X 25 cm in height rock pile/ scatter. There are approximately 15 pāhoehoe boulders and cobbles scattered 1 course high. This feature is located near chilled glass and is not very well defined. Potentially impacts to this feature are seismic activity and vegetation. Vegetation surrounding this feature includes, pūkiawe, 'ōhi'a and a'ali'i. This feature is in poor condition.

**HAVO-2005-D-136** (Feature 03-15) is an 8.1 m X 1.6 m X 55 cm in height rock wall with excavation. The rock wall is constructed with pāhoehoe cobbles and boulders. The wall is stacked 1-3 courses high and very collapsed. To the north of the wall is a pāhoehoe tumulus. There is some evidence of excavation in the tumulus, which could potentially be the source of some of the pāhoehoe rocks for the wall. This feature could have served as a temporary shelter. Potential impacts to the feature include seismic activity and vegetation. Vegetation surrounding this feature includes pūkiawe, 'ōhi'a, grasses and a'ali'i. This feature is in fair condition.



**Figure 71. HAVO-2005-D-131. C shape temporary shelter, Ka'u Desert**

Photo Courtesy of the National Park Service

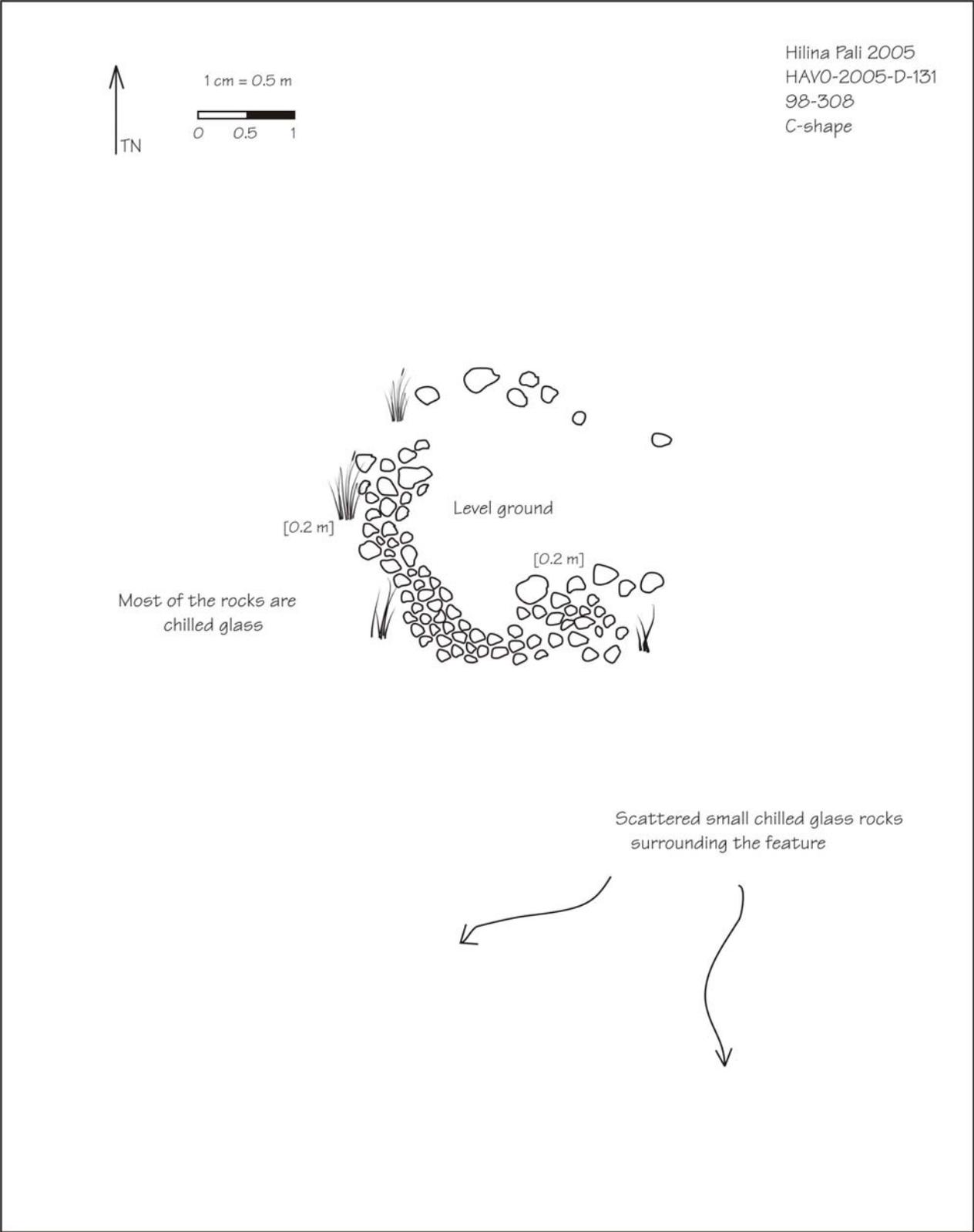


Figure 72. HAVO-2005-D-131, C Shape.

**Site Number 23028 consists of 1 cairn, 1 cairn, 1 trail, and 3 sections of the old road built by the CCC.**

**HAVO-2005-D-137** (Feature 98-384) is a .6 m long X .5 m wide X .75 m high cairn made of pāhoehoe boulders dry stacked four courses high. The cairn is placed on top of a pāhoehoe tumulus located in a vast lava field. It could potentially be impacted by seismic activity and is surrounded by *a'ali'i*, *pūkiawe*, and *'ōhi'a*. The feature is in excellent condition.

**HAVO-2005-D-138** (Feature 98-597) is a 160 cm x 95 cm and 45 cm in height rock pile or possible ahu located on top of a high tumulus just next to (south of) a natural crack. The pile is constructed of pāhoehoe cobbles stacked 1-2 courses high. There are a few rocks scattered to the northwest and southeast which were once probably part of the pile. This feature's location on a high tumulus making it highly visible may indicate its use as an ahu or marker. Seismic activity and erosion potentially impact this feature. Vegetation surrounding this feature includes *'ōhi'a*, *a'ali'i* and *pūkiawe*. This feature is in fair condition.

**HAVO-2005-D-139** (Features 03-13A and 03-13B) are the start and end points of a short trail trending north to south. The trail is easily followed because the pāhoehoe bedrock is well worn in places and visible because the pāhoehoe bedrock here is rust or reddish in color while the worn areas of the trail are grayish black in color. This feature could only be followed for a short distance and with its southern extent being point 03-13A and its northern extent being 03-13B. Vegetation, seismic activity and erosion are potentially impacting this feature. Vegetation surrounding this feature includes *'ōhi'a*, *pūkiawe*, broomsedge grass, molasses grass and *a'ali'i*. This feature is in fair condition.

**\*Features HAVO-2005-D-111, HAVO-2005-D-114, and HAVO-2005-D-115 are CCC features**

**\*HAVO-2005-D-111** (Feature WPT 122) is another segment of the old Hilina Pali road located just north-northwest of WPT 121. This segment of the road consists of pāhoehoe bedrock with patches of small pāhoehoe cobbles serving as pavement to fill uneven terrain. This segment of the road appears to connect with WPT 121, however there is a dense cluster of vegetation in between the two points. Vegetation and erosion are potentially impacting this feature. Vegetation surrounding this feature includes *'ōhi'a*, *pūkiawe*, grasses and *a'ali'i*. This feature is in good condition.

**\*HAVO-2005-D-114** (Feature WPT121) is a portion of the old Hilina Pali road. Pāhoehoe bedrock has been excavated in order to clear an even path for the road. Large cobbles that were removed have been scattered on top of the remaining pāhoehoe bedrock on either side of the road. The road is 2.8 m wide at this waypoint. This feature is fairly easy to see with only sparse vegetation, however, just north the vegetation gets thicker. The height of the pāhoehoe bedrock cleared to make the road is 45 cm on the west side and 23 cm on the east side. The new Hilina Pali road is approximately 15 m east. Vegetation is impacting this feature and includes, *'ōhi'a*, broomsedge grass, *pūkiawe* and *a'ali'i*. This feature is in good condition.

**\*HAVO-2005-D-115** (Feature WPT 123) is another segment of the old Hilina Pali road. Pāhoehoe bedrock has been excavated to even out the terrain and then piled on the west side of the road. The excavated pāhoehoe is blocky and cobble sized. This section of the road connects with WPT 121 and WPT 122, however it is hard to follow because there is a lot of vegetation. This feature is being impacted by vegetation. Vegetation surrounding this feature includes 'ōhi 'a, broomsedge and molasses grass, *pūkiawe* and *a'ali'i*. This feature is in fair condition.

**Site Number 23030** consists of 10 cairns, 1 enclosure, 1 C shape and 1 trail.

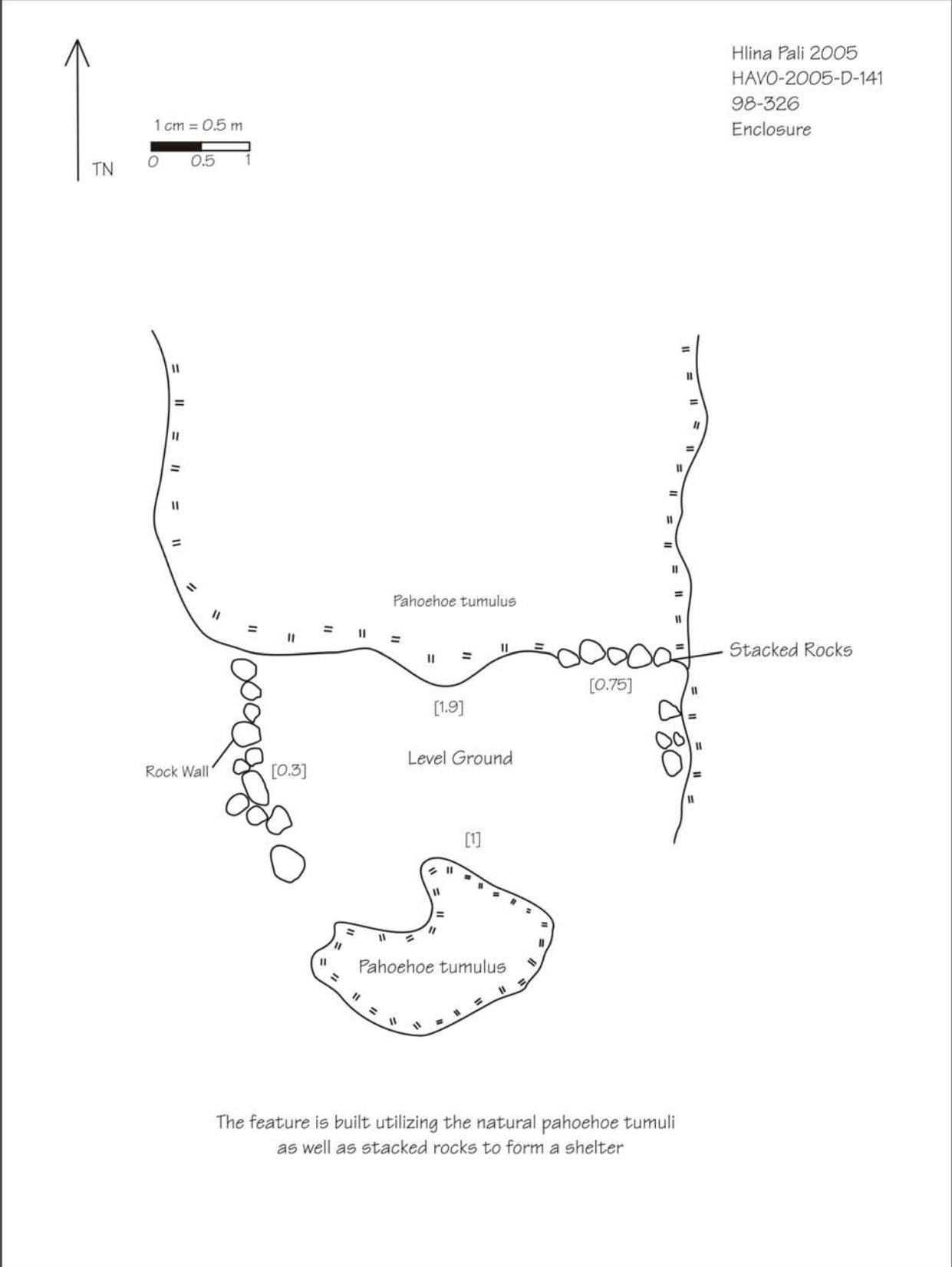
**HAVO-2005-D-140** (Feature 98-323) is a 1.3 m x 1 m and 0.45 m in height ahu located directly next to, on the east side of an unidentified trail. This feature is constructed with cobble sized pāhoehoe stone stacked 1-2 courses high. The trail is trending northwest to southeast. This feature could potentially be impacted by seismic activity. Vegetation surrounding this feature includes 'ōhi 'a, *a'ali'i* and *pūkiawe*. This feature is in fair condition.

**HAVO-2005-D-141** (Feature 98-326) is a 2.5-3.5 m long X 1.8-1.2 m wide and .5-1.2 m high enclosure/shelter made of two small pāhoehoe cobble walls and two pāhoehoe tumuli. One of the walls is on the west side of the enclosure with the dimension 1.8 m long X .2m wide X .5m high. The other wall is on the east side with the dimension 1.2 m long X .2 m wide X .7 m high. These two walls are built to connect a large pāhoehoe tumulus that is on the north side of enclosure and a small pāhoehoe tumulus that is on the south side of the enclosure. All together these form a square. The floor of enclosure is made of pāhoehoe bedrock as well as sand. The floor is level. The western wall is stacked three courses high. The eastern wall is stacked four courses high and looks somewhat collapsed. The large tumulus on the north side of enclosure has the dimensions 3.5-m long x 1.2 m high. The smaller tumulus on the south side has the dimensions of 2.5 m long and 1 m high. The function of this enclosure may have been as a temporary shelter for people passing through. The feature could potentially be impacted by vegetation and seismic activity and is surrounded by 'ōhi 'a, *pūkiawe*, and *a'ali'i*. It is in good condition.

**\* Features HAVO-2005-D-142 through features HAVO-2005-D-152 are all a part of the same trail (see figure...)**

**\*HAVO-2005-D-142** (Feature 98-382) is a .9m long X .9 m wide X .8 m high cairn constructed of pāhoehoe boulders and cobbles dry stacked 6 courses high. The cairn is located on top of a pāhoehoe tumulus in a vast lava field. It could potentially be impacted by seismic activity and is surrounded by *pūkiawe* and *a'ali'i*. It is in excellent condition.

**\*HAVO-2005-D-143** (Feature 98-385) is a 0.60 m x 0.5 m and 0.55 m high ahu located on a pāhoehoe outcrop on the west side of the trail. The ahu is constructed with small and large pāhoehoe cobbles stacked 1-2 courses high. This feature is potentially being impacted by seismic activity and is in fair condition. Vegetation surrounding this feature includes 'ōhi 'a, *pūkiawe* and *a'ali'i*.



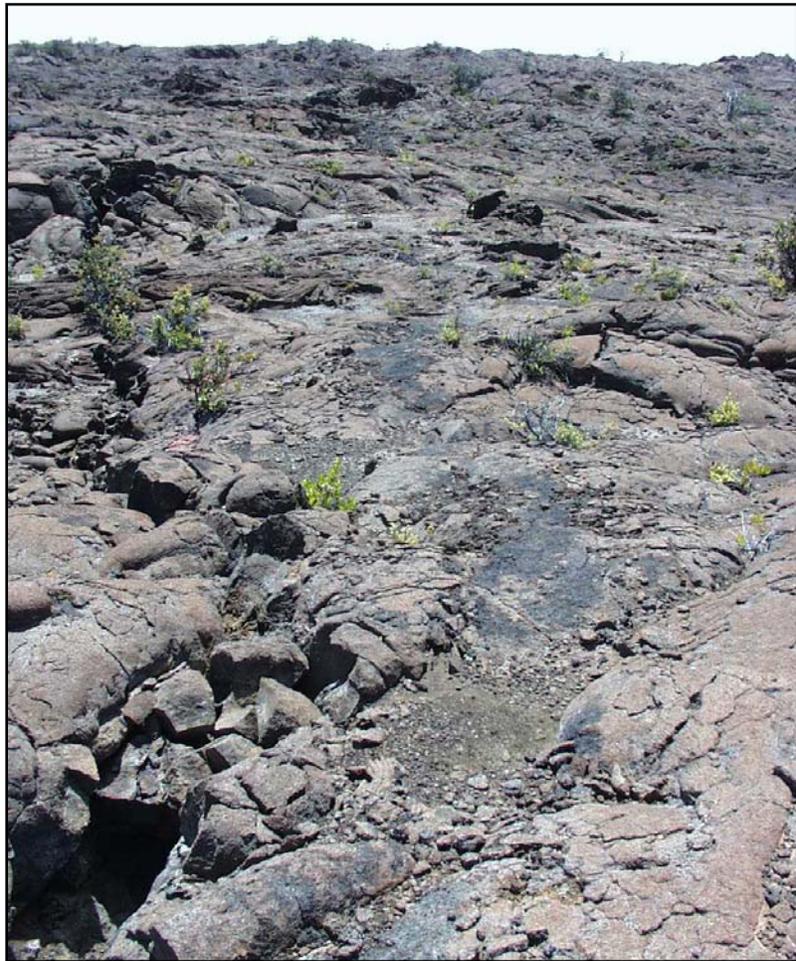
**Figure 73. HAVO-2005-D-141, Enclosure**

\***HAVO-2005-D-144** (Feature 98-386) is a .5m long X .4 m wide X .5 m high cairn made of pāhoehoe boulders and cobbles, dry stacked three courses high. The cairn is located on top of a pāhoehoe tumulus and is in a vast lava field. It could potentially be impacted by seismic activity and is surrounded by *pūkiawe* and *a'ali'i*. The feature is in excellent condition.

\***HAVO-2005-D-145** (Feature 98-387) is a 0.9 m x 0.8 m and 0.2 m in height ahu located just next to the trail. The ahu is constructed with pāhoehoe cobbles one course high with some scatter to the southeast and southwest of the ahu. This is being impacted by seismic activity and is in poor condition. Vegetation around this feature includes *'ōhi'a*, *a'ali'i* and *pūkiawe*.

\***HAVO-2005-D-146** (Feature 98-388) is a 0.6 m x 0.35 m and 45 cm in height ahu located on top of a pāhoehoe outcrop just east of the trail. The outcrop is approximately 170 cm in height. This feature is constructed from small pāhoehoe cobbles stacked 1-3 courses high. There are several cobbles scattered down slope of the ahu and at the base of the outcrop. This feature is potentially being impacted by seismic activity. Vegetation around this feature includes *pūkiawe*, *a'ali'i* and *'ōhi'a*. This feature is in good condition.

\***HAVO-2005-D-147** (Feature 98-389) is a 55 cm x 40 cm and 55 cm in height ahu located 3 m west of trail. The ahu is constructed with flat ropy slabs of pāhoehoe stacked 7 courses high. This feature is potentially being impacted by seismic activity. Vegetation around this feature includes *a'ali'i*, *pūkiawe* and *'ōhi'a*. This feature is in excellent condition.



**Figure 74. HAVO-2005-D-150, worn trail.**  
Photo Courtesy of the National Park Service

**\*HAVO-2005-D-148** (Feature 98-390) is a 0.50 m x 0.40 m and 30 cm in height ahu located on a pāhoehoe outcrop. Visually this ahu guides you to the pāhoehoe trail that gets broken up by an approximately 15m wide stretch of sand. The ahu is constructed with pāhoehoe cobbles stacked 3 courses high. There are approximately 9 small cobbles scattered to the north-northwest of the ahu. This trail may be a part of the old Puna-Ka'u Trail. This feature is potentially being impacted by seismic activity. Vegetation surrounding this feature includes *'ōhi'a*, *pūkiawe* and *a'ali'i*. This feature is in good condition.

**\*HAVO-2005-D-149** (Feature 03-09) is a 15 cm long x 15 cm wide X 25 cm in height ahu located on the edge of a large fault scarp. The ahu is constructed of pāhoehoe cobbles stacked three courses high. The trail continues in a north-northwest direction once you climb down the talus. This feature is being impacted by seismic activity and erosion and is in good condition. There is *'ōhi'a* near this feature.

**\*HAVO-2005-D-150** (Features 03-10A and 03-10B) are the start and end point of a relatively short worn trail that parallels and eventually meets up with the trail and *ahu* at feature 03-09 (at the top of the fault scarp) and also meets to the west at feature 98-390. This trail trends north-northwest along smooth but worn pāhoehoe lava. The pāhoehoe lava has a reddish color to it, while the trail is dark gray in color making it easy to follow. Seismic activity impacts this feature.

Vegetation surrounding this feature includes *'ōhi'a*, *pūkiawe* and *a'ali'i*. This feature is in good condition.

**\*HAVO-2005-D-151**

(Feature 03-11) is a 0.45 m long X 0.20 m wide X 0.65 m in height *ahu* located approximately 40 meters away from the trail and *ahu* at feature 98-387. The *ahu* is constructed with small to large pāhoehoe cobbles stacked 4 courses high. This feature could potentially be impacted by seismic activity.

Vegetation surrounding this feature includes *'ōhi'a*, *pūkiawe* and *a'ali'i*. This feature is in excellent condition



**Figure 75. HAVO-2005-D-151. Ahu trail marker**

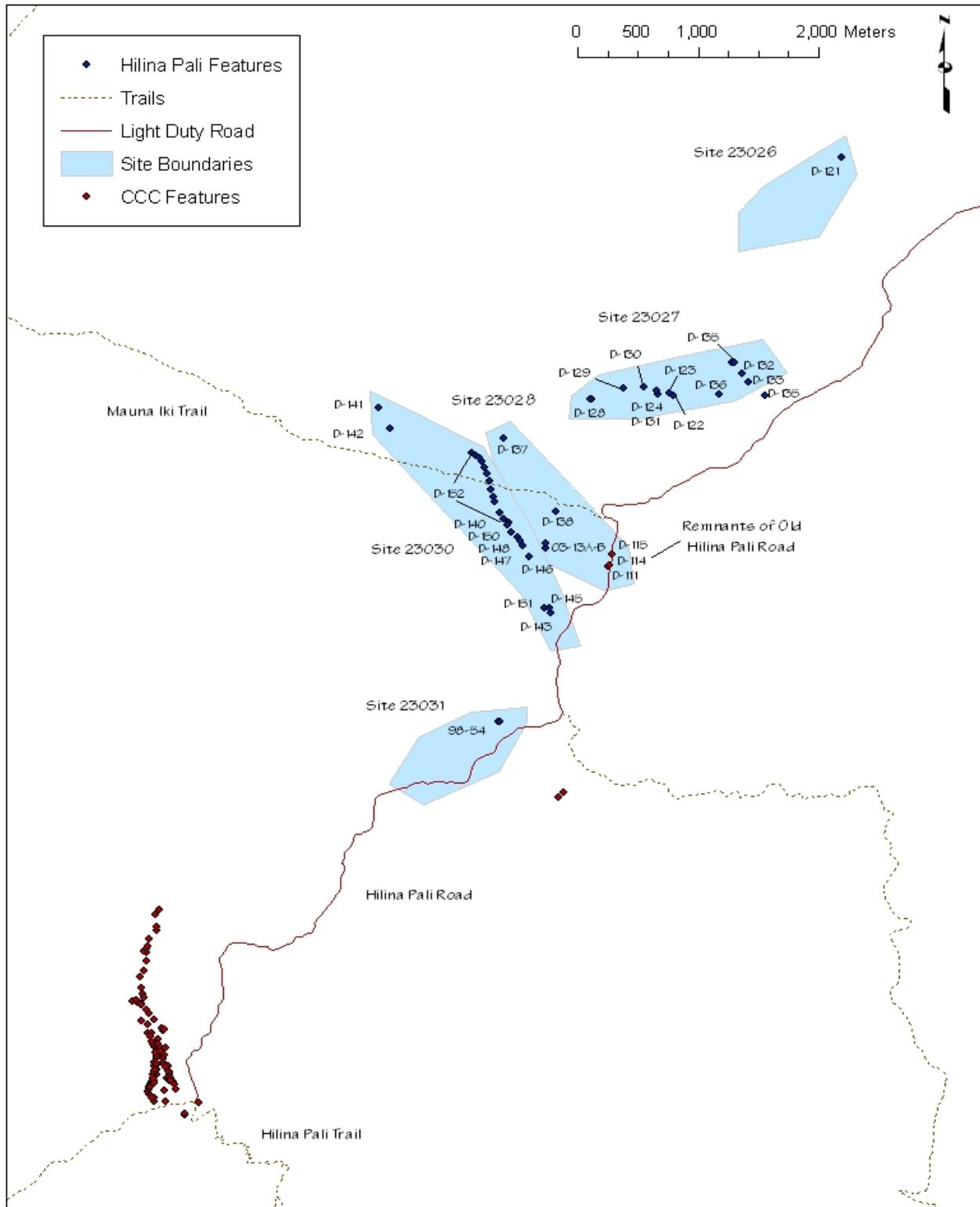
Photo courtesy of the National Park Service

**\*HAVO-2005-D-152** (Feature 03-16A-03-16L) is a worn trail. Feature 03-16A is the continuation of the trail once you climb down the fault scarp just NNW of feature 03-09.

Features 03-16A-03-16L are all points along the trail. 03-16F is where the trail crosses the Mauna Iki Trail and continues NNW in direction. 03-16 L is the last point that we could find of the trail and after that we were unable to pick the trail back up. This could be in part due to the fact that there is more sand in this area as well as more cracks, making it hard to distinguish. Features 03-09, 98-323, 98-390, 98-389, 98-324, 98-388, 98-387 and 98-385 are all points along this same trail to the south-southeast of feature 03-09. This trail is easy to follow because it is well worn and the existing bedrock is reddish in color while the worn trail is grayish black in color. Vegetation is sparse in this area also making the trail easy to follow. This feature is being impacted by seismic activity and is in good condition.

**Site 23031** consists of one rock pile.

**HAVO-2005-D-153** (Feature 98-54) is 1.75 m long X 1.15 m wide X 0.7m high rock pile and possible ahu. The rock pile is made of dry stacked pāhoehoe boulders and cobbles and is stacked one to three courses high. The feature is built on top of pāhoehoe bedrock and is near a small opening in the pāhoehoe bedrock (a blister) which is feature 98-66. This blister could possibly be big enough for a human to fit inside if lying down. There are goat bones inside the blister, or feature 98-66. It is possible that the rock pile/ahu could be a marker for the pāhoehoe blister as it could function as a sleeping shelter. Feature 98-54 could potentially be impacted by erosion and vegetation and is surrounded by *pūkiawe*, grasses, and 'ōhi'a trees. The feature is in good condition.



**Figure 76. Upper portion of the survey area, Ka'u Desert, Hawaii'i Volcanoes National Park**

**Table 1. Summary of Identified Sites**

Table 1. Summary of Identified Sites																									
HAVO Feature No.	Temp. Feature No.	Correlated Temp. Feature No.	Type	State Site No. (numbers prefixed with 50-10-62)	Easting	Northing	Feature Status					Feature Type													
							No. of Features	Located	Not Relocated	Cairn	Enclosure	Cave	Rock Pile/Scatter	Wall	C-shape	Sign	Quarry	Petroglyph	Dam	Rock Wall w/ Quarry	Geology	Mound	Old Hilina Pali Road	Rock Alignment	Rock Shelter
HAVO-2005-D-1	98-801		WALL	22487			1	1							1										
HAVO-2005-D-2	98-802		WALL	22487			1	1							1										
HAVO-2005-D-3	98-803		WALL	22487			2	2							2										
HAVO-2005-D-4	98-804		WALL(4)	22487			4	4							4										
HAVO-2005-D-5	98-805		WALL	22487			2	2							2										
HAVO-2005-D-6	98-806		WALL(2)/MOUND (1)	22487			3	3							2					1					
HAVO-2005-D-7	98-807		WALL/QUARRY	22487			2	2							1			1							
HAVO-2005-D-8	98-808		WALL/QUARRY	22487			2	2							1			1							
HAVO-2005-D-9	98-809		WALL	22487			2	2							2										
HAVO-2005-D-10	98-810		WALL/QUARRY	22487			2	2							1			1							
HAVO-2005-D-11	98-812		WALL(2)	22487	*	*	2		2						2										
HAVO-2005-D-12	98-813		WALL/PAVING	22487			2	2							1						1				
HAVO-2005-D-13	98-814		WALL	22487			1	1							1										
HAVO-2005-D-14	98-815		WALL/R.PILE/R.ALIGN	22487			3	3							1	1							1		
HAVO-2005-D-15	98-816		WALL	22487			1	1							1										
HAVO-2005-D-16	98-817		WALL	22487			1	1							1										













## **Glossary**

Ahu- Heap, pile, collection, mound, mass, altar, shrine, cairn (Elbert and Pukui 1986: 8)

Ahupua'a- Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua'a), or because a pig or other tribute was laid on the altar as tax to the chief (Elbert and Pukui 1986:9).

Pali- cliff, precipice, steep hill or slope (Elbert and Pukui 1986:312).

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